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ABSTRACT

Five papers are presented that deal with the theory and methodology of suggestive learning. The psychological basis of suggestopedia and its application to language instruction are outlined by Gabriel Racle in "The Key Principles of Suggestopedia." An outline of the organization of a classical suggestopedic language course is appended to this article. M.R. Capehart describes the uneven effectiveness of "A Suggestopedia-Based Strategy for Teaching Statistics to Mathophobic Students." Win Wenger arrives at a tentatively positive answer to his question, "Do Synchronicities in the Suggestopaedic Teaching Method Enhance Learning?" Kurt A. Fuerst describes unique features of student-teacher interaction in a suggestopedic French course for Canadian civil servants, in "Some Observations of Behavior in a Suggestopedic French Language Class." "Suggestopedia: A Transpersonal Approach to Learning," by Allyn Prichard, reviews the historical background of learning theories: suggestopedia is viewed as a pragmatic amalgam of behaviorist and humanist approaches. Finally, six abstracts of articles from the Bulgarian journal "Suggestology and Suggestopedia" are included. (JB)

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CONTENT

The key principles of Suggestopedia.
Gabriel Racle 149

A Suggestopedia-based strategy for teaching statistics to mathophobic students
M. R. Capehart 164

Do synchronicities in the Suggestopedic teaching method enhance learning?
Win Wenger 232

Some observations of behavior in a Suggestopedic French language class.
Kurt A. Fuerst 182

Suggestology and Suggestopaedia: The theory of the Lozanov method.
W. Jane Bancroft 187

Suggestopedia: A transpersonal approach to learning.
Allyn Prichard 217

ED 132 857

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Abstracts

Suggestology and Suggestopaedia. Abstracts of selected articles published in this Bulgarian technical journal (Vol. 1, No. 1) ..247

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The Key Principles of Suggestopaedia

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Abstract

The article describes succinctly the principles of suggestology and their application to teaching: Suggestopaedia language training gives a tangible illustration of the theory and its application. The author points out the importance of the subconscious factors involved and their effects.

Over the past several years, specialists in the field of innovative education have been encountering in their reading and in their discussions such terms as Suggestology and Suggestopaedia as well as references to G. Lozanov and his Institute of Scientific Research in Suggestology (Nauchnoizledovatelskiya Institut po Sugestologiya) in Sofia, Bulgaria. Fragmentary information, more or less complete, is circulating. Adaptations have been undertaken. In this context, therefore, it may be beneficial to go back to the sources and to review briefly the principles involved.

Suggestology

What is Suggestology? This neologism, formed from the Latin *suggestio* and the Greek *logia*, means as its construction would indicate, that suggestology is the science of suggestion. Many authors have been given different definitions of suggestion. In his book *Sugestologia*, Dr. Lozanov discussed the twenty-seven most popular definitions[1] but, the most interesting one is his own: Suggestion is a form of mental reverberation in which a special set-up for the development of the functional reserves of human psyche is created mainly by an unconscious mental activity.[2]

One of the basic aspects included in Lozanov's concept of suggestion is the unconscious.[3] For Dr. Lozanov, "unconscious mental activity" is the bearer not only of the darkest instinctive trends, but also of the automatic activities which condition any training and any development of man. Consequently, "unconscious mental activity is an important carrier of the memory of the species and of the individual."[4]

Enormous quantities of information enter the central nervous system by the way of receptors, but much of it enters unconsciously. This type of unconscious stimulation plays an important role in all human relations. Unconscious mental activity

in a normal state of wakefulness refers not only to the subsensory stimuli, and to the activity of perceptions, but it also includes such mental activities as, inclinations, affections, and aspirations. These continue to exist even if they are not acknowledged. They exist in the form of a "set-up". They play a part in some specific reactions or in the direction of some voluntary or involuntary actions.

Spontaneous or involuntary actions fall under unconscious mental activity. In the case of a sudden fall, for example, the falling person automatically protects some part of his body or some object which he is carrying. Not only the automatic muscular reflexes, but also the mental activities are well organized. "The automation of many intellectual processes is a basic pre-requisite for the development of the individual."[5] A conscious activity, such as logical speech, is based on an infinite number of unconscious elements. Some of these might be the automatic use of speech itself, the use of words, of grammar, and so on.

Set-up

"Unconscious mental activity includes the whole internal structure and functional organization of the unconscious forms of higher nervous activity, which by way of the set-up acquire certain systematic and programming pointedness"[6]. According to Dr. Ph.V. Bassin it is impossible to understand the organization of the most important form of brain activity without the concept of unconscious *set-up*.[7] The term set-up is used to refer to the regularities of spontaneous unconscious mental activity. *Set-up* then makes it possible to understand spontaneous actions, functional structure of the act of the behaviour and many other aspects of an internal life. *Set-up* is an English translation of the Russian word UCTAHOBKA. It is difficult to give an exact translation of the concept; in Bulgarian: it is HAJIACA; in German: EINSTELLUNG; in French: "orientation psychologique".[8] The term means a "psychological orientation" or a "psychological disposition." This "orientation" or "disposition", "implies a change or a modification in the condition of certain of the body's physiological systems, a modification which is conditioned by previous experience and which prepares and controls the subsequent activities of the organism, predisposes and orients it towards a specific action".[9]

This notion of set-up is included in the Lozanov definition of suggestion: "a form of mental reflection in which, primarily through unconscious mental activity, a special set-up is created for developing the functional reserves of man's psyche".[10] If we can create a set-up for developing the reserves, we are on the way to tapping these reserves by means of an automatic and rapid process. It is possible to do that using suggestion. Suggestion is direct information to the unconscious mental activity. As

Dr. Lozanov says, "Suggestion is the direct road to the set-up. It creates and utilizes such types of set-ups which would free and activate the reserve capacities of the human being."[11]

But it is important to underline that the ordinary set-up does not result in suggestive phenomena such as hypermnesia, anesthesia, etc. Suggestion utilizes a special kind of set-up, a suggestive set-up, where the reserves of the human mind are activated.

Suggestive-Phenomena

It is possible to characterize the suggestion phenomena in such a way as to distinguish them from the ordinary non-suggestive mental phenomena. According to Dr. Lozanov, the most important characteristics of the suggestive phenomena are: directivity, automation, speed, precision and economy.

The term "directivity" means that the information uses direct paths to penetrate into the functional areas of unconscious mental activity. "Directivity is one of the most important features of suggestion."[12]

Automation: conditions are created for a rapid and very often sudden automatic response, not only of the motor acts but also of mental activities, "including the memorization of large amounts of material."[13]

The "speed" of the suggestive phenomena is a consequence of directivity and automation.

"Precision" is observed very often in suggestology. It results from the general suggestive mechanism.

"Economy" (an economy of energy) is the result of directivity, automation, speed and precision. Its consequence is the absence of fatique.

Suggestion reaches the unconscious and activates the reserves, most frequently, through the non-specific mental reactivity. The non-specific mental reactivity is an essential aspect of the unconscious mental activity because the suggestive effects are realized through this channel.

The non-specific mental reactivity

We unconsciously receive signals, suggestive signals. They are suggestive because they are not conscious and they are not rational. The number of those non-specific stimuli is very great. For example, we react not only to the specific semantic content of the statement, but also to all the non-specific stimuli that go with it, before, during or after the utterance, (i.e. intonation of the voice, accent,[14] facial expression of the interlocuters involved in the discussion, gesture, etc....)

Dr. Lozanov calls this type of mental activity non-specific. Suggestion reaches the unconscious mental activity mainly by this non-specific mental reactivity. These non-specific mental re-

actions are particularly numerous in the artistic field. Music, rhythms, harmony of sound, form or colour act directly on our unconscious and provoke reactions, evoke feelings, create desires, much more directly than would a rational, logical and conscious process. "Music has charms to soothe a savage beast" said Congreve, and with good reason. The fine arts are therefore a favoured field for suggestions reaching our unconscious both rapidly and effectively, demonstrating the great importance of non-specific mental reactions. Even though the suggestion is unconscious, it is carried out at a conscious level; it suggests a conscious action. If we analyse the psychological state of the subject we find that it is always based at a rational level; the unconscious impetus leads to a conscious expression and the subject himself is not aware of the deep bases for his behaviour. "The consciousness, as far as it is engaged, comes into play the ultimate results . . ."[15]

But not all the signals entering by way of non-specific mental reactivity have the value of a suggestive effect. However, they have significance, and sometimes, they later emerge in the mind, or they remain as a part of a suggestive background.

The Dialectical Desuggestion-Suggestion Process

Dr. Lozanov has established in his experimental work that these suggestive factors — these emotional, more or less unnoticed factors — which start at birth and continue to the day we die, in fact limit our capacities.

If suggestion is a normal phenomenon existing in all relationships between individuals, it is clear that there is a social suggestive phenomon and that this phenomenon is so powerful that it, in fact, determines an actual suggestive social norm as far as the human being and his reactions are concerned. In fact a standard is established in some way, and those deviating from this standard are considered somewhat abnormal. This is why Shakuntala Devi[16] has been able to travel around the world demonstrating her exceptional ability to carry out phenomenally rapid and accurate mathematical calculations. This is why learning mathematics has gained the reputation of being difficult.[17] This is why, too, a certain number of years are required to obtain a diploma, and why learning a foreign language has been considered difficult for an adult.

It is easy to enumerate a long list of examples of this type. Our society imposes a large number of limitations resulting among other things from routine, fear of novelty, incompetence, charlatanism, and the school atmosphere (insistence on effort, accent on difficulties, parcelling of subject matter, extension of programmes, etc.). Finally, ignorance of our own real capacities both physiological and intellectual is another limiting factor.

The first task of suggestology and suggestopaedia will therefore be to remove peoples' prior conditioning to desuggest, to find the way to escape the social norm and open the way to development of the personality.[18] This is perhaps the greatest problem suggestology is confronted with, since the person must be "convinced" that his potential capacity is far above what he thinks it is. The individual protects himself with psychological barriers, according to Dr. Lozanov, just as the organism protects itself with physiological barriers:

—an anti-suggestive emotional barrier which rejects anything likely to produce a feeling of lack of confidence or insecurity: "This anti-suggestive barrier proceeds from the congenital negativist set-up in every man".[19]

—an anti-suggestive barrier of man's rational faculty which though reasoning rejects suggestions it judges inacceptable: "This barrier is the conscious critical thinking."[20] But, very often this barrier is the camouflage of the emotional barrier.

—an ethical barrier, which rejects everything not in harmony with the ethical sense of the personality. This barrier, however, is not as important as the two others, because of the fact that suggestions are usually neutral with respect to the ethics of the personality.

These anti-suggestive barriers are a filter between the environmental stimuli and the unconscious mental activity. They are inter-related and mutually reinforcing, and a positive suggestive effect can only be accomplished if these barriers are kept in mind. Attacking them head-on accomplishes nothing. It is better to satisfy them and thus defuse them, so as to be able to get at and activate the reserves. The overcoming of barriers means compliance with them. Otherwise suggestion would be doomed to failure.

It is clear that the suggestive process is always a combination of suggestion and desuggestion and is always at an unconscious or slightly conscious level.[21]

Suggestopaedia

All suggestopaedic teaching must take into account the above basic principles. In normal life, psychological subconscious influences come to us unorganized and some of them are directed in different directions in such a way that this lack of coordination, this lack of organization, produces no significant effects. The suggestopaedic system on the other hand is organized to co-ordinate the unconscious and conditional signals, to free people from life's negative suggestions and to activate the reserves of their mind. It is an endless process.

In suggestopaedia then, it is a matter of creating learning conditions that simultaneously remove the results of previous conditioning and suggestion (desuggestion), permitting the student's reserves to be reached, his memory to be increased and all his intellectual functions to be activated (suggestion). Suggestopaedia then is a pedagogical science concerning the entire individual, developing all his capacities and all his creativity. It is based on a total approach. It is a system that is as scientific as possible and integrates the basic principles of pedagogy with the principles of suggestology. Suggestion is the basic mechanism of suggestopaedia just as it may also be of psychotherapy. There will therefore be effects that are not purely pedagogical. "Suggestion may reveal not only the reserves of human persons in respect to memory, but also in many other directions."[22]

The main principles

The main principles of suggestopaedic teaching are the following: the principle of pseudo-passivity, the principle of synthesis, and the principle of suggestive inter-relation.

Pseudo-passitivity is created by a pleasant and calm atmosphere which minimizes stress, nervousness, worry, or fatigue. It is a state of mental relaxation based on confidence in the success of the method. This state of mental relaxation is not induced by a technique of relaxation[23] but by the judicious usage of the non-specific mental reactivity.[24] It lasts not only for a specific phase of a course, but also for all phases of the learning process.[25]

Using the principle of **synthesis** in suggestopaedic teaching involves two combined approaches, **direct imitation** based on memorization and the **indirect reasoning approach** based on an activity requiring intellectual effort. Both of them are based on a suggestive set-up which activates the reserves not only of memorization but of intellectual activities in general.

The principle of **suggestive inter-relation** refers to the teacher and his suggestive relationship with his students. This principle is related to the principle of pseudo-passivity. It implies a specific theoretical and practical training of the teacher[26] who has to utilize the means of the nonspecific mental reactivity.

The suggestive factors:

The suggestive factors that can break down anti-suggestive barriers through non-specific mental reactions and go beyond the capacities of the average human intellect are as Dr. Lozanov mentions:[27] prestige, confidence, double plane, intonation, rhythm, and concert pseudo-passivity.

Prestige or authority:

Prestige refers to the authority of the source of suggestion, which gives great influence to the method or to its users and opens the way to the reserves of the human personality. The more prestige the source of the information has, the better the recipient will accept and retain the information. The information value of the words depends on its source. Prestige and credibility surmount the anti-suggestive barriers and impose the information in some way on the memory. Dr. Lozanov mentions numerous experiments carried out with various groups of students. For example, on August 15th, 1967, 165 new French words were suggestively memorized without any suggestive elements other than a considerable increase of prestige added to these words. The average percentage of memorization for the whole group was 96.5%.[28]

This is only one example,[29] "There are a number of psychological experiments which demonstrate the great significance of authority in increasing the suggestive impact of speech. This can be seen in both clinical practice and in social life. In the course of our experiments ... we obtained a considerable intensification of the memory functions under the influence of authority".[30]

This prestige and credibility must not be restricted to the actual teaching. They must be present in the physical surroundings, the material and administrative organization of the centre, the method, the documents used in teaching, and above all in the teacher. Everything must have the same orientation so as to engender in the student a total confidence contributing to his development.

Confidence or infantilization:

Prestige, credibility, and authority create a growing state of confidence in the student. This confidence brings about a state of peace, calm, and tranquility which aids in breaking down the anti-suggestive barriers and increases receptiveness. The more confidence one has, the more enjoyment there is in learning.[31] Results increase also, thus increasing the prestige of the method and at the same time confidence in the method, in the teacher, etc. Infantilization is not infantilism and "does not imply a full scale return to earlier age-periods."[32] Well-organized and developed, the infantilisation state is a favourable basis for the development of the desuggestive-suggestive process.

Double plane:

There is more than one plane in any act of communication. On the first level we have the linguistic code and its immediate significance and on the second, the whole environment of the spoken word, conscious or unconscious: non-verbal signs, gestures, intonations, motion. "These unconscious signals are frequently of great information value to the persons receiving them."[33]

10

Everything on this second level plays an important role in teaching. It contributes to the creation or reinforcement of the student's confidence and the credibility of the professor. It facilitates the breaking down of barriers and the teaching of the reserves. The teacher, in the case of learning, like the doctor or the psychotherapist in other fields, must be perfectly aware of the double level and act with this in mind. Alterations in expression, general behaviour and background, thought not to be consciously perceptible, may play a great role in the obtainment of suggestive results. "Quite often these unconscious signals possess great information value for the receiver ... They can, to a certain extent, be controlled and organized in compliance with the requirements of a suggestive situation."[34]

Intonation

Intonation is one of the elements of the second plane. Intonation gives more results if it appears as a signal for authority and motivation. For this reason not all intonations may be used as a suggestive factor. "Words exercise a suggestive effect only when they are pronounced with a solemn, moving or commanding tone, i.e., when words create an affect not only by their dictionary meaning but also with their loudness, rythmn, and timbre and with their affective nuance."[35]

Rhythm

The interval between the elements of a programme has an affect of memorization. Consequently, it is important to take this factor into consideration. Rhythm is a form of art and as such has deeply suggestive effects.

Concert pseudo-passivity

"Fine arts are the highest form of suggestion."[36]. This is why a musical program presented in a calm atmosphere is of great importance to overcome the anti-suggestive barriers and to activate the reserves of the mind. The state of concert pseudo-passivity is created by the other factors, prestige and confidence on one side, intonation, rhythm, etc. on the other, assisted and stimulated by a suitable musical background. This concert psuedo-passivity is not produced by a state of relaxation." It is not necessary to conduct preliminary training in autogenics training, relaxation or Yoga Savasana. Only a set-up of a calm attitude toward and confidence in the presented suggestive program simulating attendance at a concert, is required."[37]

These various suggestive factors are closely inter-related and mutually reinforcing and their use is part of the overall approach already mentioned.[38] This again is no simple "gimmick"; several

experiments have been carried out by Dr. Lozanov. One example shows that the use of an isolated "artistic" element such as intonation or music, does not give significant results, but that these results are obtained if this "element" is a part of a whole to which are associated, prestige — authority, confidence — infantilization, the double plane, intonation and the arts. Suggestopaedia is thus a holistic system.

Suggestopaedia in Language Teaching

One of the best examples of a pedagogical application of suggestopaedia is found in the field of language teaching. Suggestopaedia was first used by Bulgarian researchers in the field of language teaching for the following reasons:[39]

1. Memorization and acquisition of automatisms are of great importance in the learning of languages.
2. Retention activity is easily and objectively carried out, for example by means of word lists.
3. Volunteer "guinea pigs" are easily found for the preliminary experiments because of Bulgarians' interest in foreign languages.

Several experiments are described in G. Lozanov's *Sugestologia*, in particular the memorization of 1,000 French words or short phrases in a single suggestopaedic session which, in a translation test to determine the success rate, produced the following remarkable results: 90% (1), 99%(1), 96%(1), 97%(1), 98%(3), 100%(8) (population ages 22 to 60).[40] In another experiment the memorization of 1,200 Greek words in one day — also resulted in an average retention rate of 90%.[41]

One of the most significant experiments was done in Bulgaria in 1965 under the sponsorship of the education ministry and under the supervision of a group of doctors and teachers. The director was Professor E. Sharankov of the Department of Psychiatry of the Sofia Institute for Advanced Medical Studies. In seventy hours the contents of the first Mauger test-book were taught with a success rate of 93.6%.[42]

As a result of numerous experiments, the Bulgarian researchers went on from isolated lexical units or sentences to proper manuals, made up in accordance with the above principles. These manuals were developed according to precise suggestopaedic principles so that the teaching of the language would be absolutely and totally in conformity with the principles of the method. It is important to underline that the suggestopaedic manual is an extremely important factor of the global suggestopaedic approach.[43]

Some suggestopaedic aspects

The other elements which have to be integrated into the process to obtain an effective and productive mastery of the material studied are:

12

Creation of an agreeable suggestive atmosphere. The setting must be physically agreeable to make the study room more like a living room than a classroom. This helps to take away some of the school flavour and encourages an ambiance of interrelationship and exchange instead of a college feeling. The setting must also be psychologically agreeable with respect to the behaviour of the teacher and the attention given to every student by the teacher, [44] by the programme director and the personnel at the center.

Integration of the arts into the teaching process. Judicious use is made of art lectures, theatrical presentation requiring physical expression, music, and particularly intonations. For example, the new dialogue of a lesson is presented orally with various intonations: a normal tone of voice, a whisper, and a triumphant voice. In this connection, it is interesting to note that Dr. Lozanov is the author of a special psychotherapeutic method published in1963 called "The Whispering method".

The new dialogue is read while classical music is played in the background. At this stage of the lesson, during the concert, the students are in a state of pseudo-passivity;[45] they do not try to memorize the material presented, but they leave themselves to perceive emotionally the musical programme.

The linguistic content of the lesson is extensive requiring the mobilization of reserves of the student and giving him positive suggestions. The linguistic content is sizeable because the student has sufficient potential reserves to assimilate it. The first lesson has close to 200 new words in it. In the first ten lessons, given over a total of 66 hours, approximately 2000 lexical units are presented. This is very important in the dialectic of desuggestion-suggestion because in such a programme it is possible to do away with the student's habitual standard, or desuggest him, by suggesting new possibilities.

The communication situation: If language is, above all, a tool of communication and holds an essential place in human relations, it is quite evident that anyone learning a language wished to learn how to communicate, orally or in writing, in this language. With the suggestopaedic method of language learning, the student enters directly into the field of communication.[46] From the very beginning of the course, the student is placed in a real communicative situation within which he develops and reacts. This is possible because of the increased memory capacity developed by the suggestive approach.

The importance of this pedagogic strategy lies in the unconscious stimuli which act upon the student and place him in the state of psychological relaxation necessary for successful learning. The dialectical desuggestion-suggestion process is at work.

CONCLUSION

Suggestopaedia thus represents a true philosophy of teaching. It is not a package of techniques or a collection of "tricks". It is, as Dr. Lozanov indicates **a new science** *(e nova nauka).*[47] If it is perceived as a science there is no doubt that Suggestopaedia has a very promising future.

Foot Notes

[1] G. Lozanov, *Sugestologiya*, Sofia, 1971, pp. 254-257. See also p. 81 ss.

[2] G. Lozanov, *id*, p. 259.

[3] For another basic aspect, the "reserves", see our *Introduction to Suggestopaedia*, in A Teaching Experience with the suggestopaedic method, Ottawa, 1975, pp. 213-215.

[4] G. Lozanov, *Osnovi na Sugestologiyata*, p. 40.

[5] G. Lozanov, *Sugestologiya*, p. 34.

[6] Ph. V. Bassin, *Problema "bessoznatlenogo"*. Moscow, 1968.

[7] We will soon publish a specific article on this subject.

[8] or "attitude".

[9] Ph. Bassin, V. Rojnov, M. Rojnova, *Freud et le freudisme en U.R.S.S.*, Psychologie, Jan. 1972, p. 34.

[10] G. Lozanov, *Osnovi na Sugestologiyata* — Foundations of Suggestology, Problemi na Sugestologiyata, Sofia, 1973, p. 42.

[11] G. Lozanov, *Sugestologiya*, p. 175.

[12] *id.*, p. 99.

[13] *id.*, p. 100.

[14] See for example: M. Ryan, *The Influence of Male and Female French and Spanish Accented English Speech on Speaker Credibility*, Paper presented to the International Communication Association, Portland, Oregon, April 1976.

[15] G. Lozanov, *Sugestologiya*, p. 99.

[16] We mention her name, because she traveled to North America two years ago, and because she is very well known in Russia and Bulgaria. See for example Tekhnika Molodezhi 1968, 8, p. 29 *(An Indian Phenomenon)*, Za Rubezhom, 1970, 2, p. 29 *(Faster than a computer)*.

[17] A typical example of this kind of negative suggestion: "There are symptoms which indicate that new math introduced in Hawaii Schools in 1966, is not the answer for all students. Teachers found that ... **non-mathematical students** ... had real problems." V. Ong, *New math adds up to a question mark*, The Honolulu Advertiser, Nov. 6, 1974, p. C-1.

[18] "The first objective of Suggestopaedia is to remove the results of previous suggestion" G. Lozanov, *Private Conversation*, May 22, 1974.

[19] G. Lozanov, *Sugestologiya*, p. 191.

[20] *id.* p. 191.

[21] "The use ... of the so-called direct suggestion very often cannot produce the expected results" *id.*, p. 198.

[22] *id.* p. 18.

[23] "After special experiments, it was proved that relaxation was not necessary *(relaksatziyata ne e neobhodima)* for attaining the phenomen of hypermnesia", *id.* p. 275. See also G Lozanov, *Theorie generale de la suggestion dans le processus communicatif et activation des reserves globale de la personnalite de l'apprenant*, Paper presented to the Premier congres mondial d'hypnopedie et de suggesto-hypnopedie, Paris, May 1976, (brief report in Suggestopaedia Canada, Information Letter No. 3, p. 11.)

[24] For more details, see G. Racle, *Suggestopaedic Language Teaching and the Communication Situation*, Proceedings of the Second International ATESOL Conference, Dublin, July 1975, (in press), and G. Racle, *Apprentissage langagier et facteurs suggestopediques*, Revue de Phonetique appliquee, (in press).

[25] G. Lozanov, *Sugestologiya, p. 275.*

[26] See G. Racle *Teachers and Suggestopaedi Language Teaching*, in a Teaching Experience with the Suggestopaedic method, pp. 251-261.

[27] G. Lozanov, *id.*, pp. 202-248, or *Osnovi na Sugestologiyata*, pp. 50-51.

[28] G. Lozanov, *Sugestologiya*, p. 207.

[29] See an other example in our *Introduction to Suggestopaedia*, p. 217.

[30] G. Lozanov, *id.* p. 202.

[31] "The principle of "joy and absence of tension" requires a joyful freedom in the process of learning ...", G. Lozanov, *Suggestopaedia in Primary Schools*, Suggestology and Suggestopaedia, 1975, 2, p. 4.

[32] G. Lozanov, *Osnovi* ... p. 50.

[33] G. Lozanov, *Sugestologiya*, p. 231.

[34] *id.* p. 231.

[35] I Sumbaev, *K metodike vnoucheniya I bodrstvenom sostoianii*, Moscow, 1958.

[36] See G. Racle, *Introduction to Suggestopaedia*, p. 218.

[37] G. Lozanov, *Sugestologiya*, p. 199.

[38] "The principles and the means of suggestopaedia are inseparably linked. They should be realized simultaneously in every moment of the process of instruction", G. Lozanov, *The nature and history of the Suggestopaedic system of teaching foreign languages and its experimental prospects*, Suggestology and Suggestopaedia, 1975, 1, p. 9.

[39] G. Lozanov, A. Novakov, *Sugestopedichna metodika pri tchujdoezikovoto obuchenie*, Problemi na Sugestologiyata, p. 118.

[40] G. Lozanov, *Sugestoligiva*, p. 40.

[41] G. Racle, *Suggestopaedia and Language Teaching, International Perspective*, Suggestopaedia Canada, Information Letter no. 2, p. 1.

[42] G. Lozanov, *id.* p. 21 ss.

[43] See A. Novakov, *Nekotorjie Xarakternjie ossobennosti sugestopeditcheskogo utchebnika po inostrannomu iazjiku*, Problemi ... pp. 292-295.

[44] See note 26.

[45] See note 25.

[46] See note 24 and G. Racle, *The Linguistic approach in the Suggestopaedic Teaching of Languages*, A Teaching Experience ... p. 263 ss. See also A. Novakov, *The psychological and psycholinguistic advantages of direct entry into the foreign language through the act of communication*, 1st International Symposium on the Problems of Suggestology, Varna, 1971, Reports and resumes, p. 40 (in Bulgarian).

[47] G. Lozanov, *Sugestologiya*, p. 8.

APPENDIX

General Organization of a Classical Suggestopaedic Language Course

The model briefly described below is the classic Bulgarian suggestopaedic model of a language course. We observed this model, and we applied it in 1972, at the Scientific Research Institute of Suggestology. With two colleagues, we taught a complete French course of 5 weeks, to Bulgarian students. The same model was used, with a double concert added, in 1974 and 1975, on return trips to Sofia.

A first course is covered in a period of twenty-five successive half-days — twenty-two being devoted to actual teaching, leaving three for tests and a final presentation. Each half-day contains three hours of instructions, thus a complete course is covered in sixty-six hours.

The Course — The Dialogue

The course includes an entrance test to check the student's knowledge, ten dialogues, a final test and a final presentation.

Each dialogue is presented over a six-hour period, making sixty hours altogether; there are two three-hour review periods, one midway through the course and one at the end, bringing the total to sixty-six hours. Periodic checks are made to test the student's assimilation of the material as they go along. Six hours are devoted to the study of each dialogue, in periods of one and a half hours, three hours and one and half hours. During the first week of the course, the material is presented orally. The texts of the dialogues are given to the students only at the end of the week, when a new form of activity, reading, is begun.

The Course — The Stages

Phases of the Dialogues

1. Presentation of the dialogue and memorization.
2. Acting out of the content in realistic situations.

Presentation and Memorization

1.1 Summary

—to familiarize the students with the topic of the dialogue and its various component situations.

The emphasis is on the facts and the action rather than on the linguistic aspects.

1.2 Breakdown

—to show the content of the dialogue in detail, to go over the main difficulties, to help memorize the key points. This is a reading of the text by the teacher, interspersed with questions, repetition by individuals or the whole group.

1.3 Active session*

—to structure the memorization.

The teacher reads the text using three different types of intonation — declarative, persuasive and triumphant.

These three types of intonation are associated with psychological effects, and suggest to the student facility, achievement and victory. This session is very important, and the teacher must make sure he has perfect mastery of the three types of intonations.

Immediately preceeding and following this session, there is a short musical presentation.

** Now, in Sofia, this session has been replaced by another concert.*

1.4 The concert

—is played mainly to reinforce memorization by creating a relaxed atmosphere that suggests on the unconscious level that learning is easy and pleasant.

2. ACTING OUT

This is accomplished in two stages:

1. An analytical stage
2. A synthetic stage

2.1 Analytical stage

—is mainly covered on Day 2 of each dialogue.

this involves going over the dialogue and having the students act it out, using procedures that respect the principles of the method — games, problems, competitions, conversation in pairs, mini-situations, and so forth. This must not be made to look like an exercise, in other words like gratuitous linguistic activity for its own sake, because that would put the language — and its difficulties — in the foreground. The important thing is to put the language in the background and bring out the ideas that will appeal to the psychology of the student and motivate him to speak.

2.2 Synthetic Stage

—takes place mainly on Day three of each dialogue.

This is a creative stage in which the student will act out his knowledge in more complex situations and will synthesize all he has learned in whatever way he chooses.

Last Days of the Course

On the second-to-last day the students are given a test correponding to the entrance test.

The next day they give a presentation where they put their knowledge to use in a situation, or in a series of situations, created entirely by themselves. The staff, Director, teachers, secretaries, attend this final presentation, which is concluded with a few remarks from the Director.

G. Racle

J. of Suggestive — Accelerative Learning and Teaching, 1976, 1(3)

A Suggestopaedia-based strategy for teaching statistics to Mathophobic college students.*

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Abstract.

This pilot study investigated teaching a few elementary statistical concepts with selected suggestopedic techniques to 10 mathophobes, college students highly anxious about mathematics. The statistical achievement of these self-selected students was significantly worse than that of the comparison students on the experimental material, but no different on later material. The comparison students were not a true control group, as they had a better math background initially. Also, the criterion test may have been biased against the experimental students. In spite of negative results, the value of this study lies in the demonstration of applying suggestopedic principles to teaching statistics, and in the improved learning attitudes of mathophobes.

Students with high anxiety are found at all grade levels in the educational system. Beginning with school phobia in kindergarten, to the point where a doctoral candidate fails to complete his dissertation, anxiety acts to inhibit learning, change the educational objective, or terminate the effort entirely (Gaudry & Spielberger, 1971).

At the university level, anxiety may be more a determinant of success than ability for both undergraduate and graduate students, since they comprise a preselected group with a middle to high range of ability.

While psychological research supports the role of mild anxiety in effecting achievement, extreme anxiety may block learning completely (Lashley, 1963; Spence, 1956; Cattell & Scheisser, 1961; Sarason, 1966; Spence & Spence, 1966).

Extreme anxiety, a psychosomatic syndrome derived from fear, is characteristic of many students. Mathophobia anxiety related to mathematics, however, may affect students with generally low levels of anxiety (Lazarus, 1974).

* This paper is based on work done for a Master's thesis while the author was at California State University-Northridge.

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In the social sciences, a knowledge of statistics is a requirement for most undergraduates. For many majors a course in statistics is mandatory at the graduate level.

Statistics classes appear to arouse unusual anxiety and resistance in generally non-anxious students as well as students with good general ability in mathematics in addition to the mathophobe, so that getting through often becomes more important than the acquisition of this valuable tool.

Comprehension and use of the literature upon which scholarship is based are virtually impossible without an understanding of statistics. Further, an individual who is unable to use statistical tools may be hampered in contributing meaningful research either as a student or as a professional.

The term anxiety is not easily defined, as a review of the extensive literature in physiology, neurology, psychology, and medicine will attest. As a behavior, it is evidently linked to the level of intelligence in the mammal, reaching its peak in man, leading Charles D. Spielberger (1966) to equate anxiety with humanity and to say, to be human is to be anxious.

Anxiety encompasses both physical and mental responses involving physiological, emotional and motoric as well as cognitive and ideational activity. The scope of the concept of anxiety and the complexity that defies a simple definition is well explored and illuminated by Spielberger's (1966) anthology, *Anxiety and Behavior*, including chapters by Cattell, Malmo, Wolpe, Schacter, Mandler, Sarason and others with coverage of the extensive literature and references to original research. In addition, the two volumes entitled, *Anxiety: Current Trends in Theory and Research*, which Spielberger (1972) edited, incorporating the papers presented at a symposium on anxiety at Florida State University in the spring of 1970, further underline the complexity of this human behavioral response.

In the preface to this work, Spielberger states:

> One of the main goals of the symposium was to stimulate confrontation among opposing views with the expectation that this would, at least, provide clarification of the terminology and elimination of the semantic confusion that now plagues the field (xiii).

Particularly pertinent to this present study is Part V in Volume II of this work which is devoted to anxiety in college students and school children, and its relationship to attention, tests, the effects of intervention on the school culture, and methodological issues in educational research.

The complexity of anxiety derives from the complexity of man himself — his ability to respond not only to external stimuli, perceived as threatening, but also to subjective promptings that elicit affect.

Physiological arousal in man does not depend upon sensory impulses. It also arises from "higher level symbolization and thinking." The characteristic human phrase, "I get scared all over again, just thinking about it," (Paul & Bernstein, 1973) illustrates how cognitive ability relates to anxiety. Ideas, images and memories evoke as strong physiological arousal as present dangers.

In exploring anxiety, we can bypass the basic conflict between the Cannon and James-Lange theories of emotion — we are afraid because we run versus we run because we are afraid. In the anxiety response, we are not dealing with the basic fear — fight or flight — reaction to a tangible situation or object, but with a secondary or derived idiosyncratic subjective reaction.

Anxiety elicits the same physiological arousal involving the sympathetic branch of the autonomic nervous system that is activated by the fear response through the ascending reticular activating system (ARAS) (Lindsley, 1951). The ARAS is the central arousal system or energizing system which Hebb (1955) hypothesized provided a physiological basis for the learning concept of drive.

The ARAS, over time and interacting with experience, monitors the level of arousal necessary for the organism in a given situation.

Under conditions of anxiety, the levels of arousal of the individual may be raised to the point that they interfere with efficient performance of both motor and cognitive skills. "For any given task the quality of an individual's performance seems to bear an 'inverted U' relationship to the level of arousal" (Paul & Bernstein, 1973, p. 3).

Confounding the question of arousal states is the fact that identical states of physiological arousal may be interpreted as pleasant or unpleasant depending upon perception. Schachter's attribution theory (Schachter & Singer, 1962; Schachter, 1964) hypothesizes that the same level of arousal may inhibit or facilitate behavior depending upon cognitive appraisal of the expected response. A level of arousal that might exhilarate one student and spur him to accomplishment will, on the other hand, prove debilitating to another student who interprets the arousal as an anxiety response.

Perception not only affects anxiety but it is in turn affected by it. The ability to appraise a situation and think through to a satisfactory solution is impaired, which further contributes to uncertainty. "Ambiguous threat cognitions" result in anxiety "since the threat in anxiety is largely symbolic" (Wolpe & Lazarus, 1966). Since in anxiety there is nothing concrete to change and the harm cannot be clearly identified, no rational action can be taken. The action of externalizing the danger as sug-

gested by Freud and others is difficult to accomplish because of the nebulous nature of the cause.

> In any case, one of the hallmarks of anxiety is uncertainty, not only over the exact nature of the threat (primary appraisal) but, in consequence of this, over what might be done about it (secondary appraisal) (Lazarus & Averill, 1972, p. 250).

Building on the work of Cattell and Scheier (1961), Spielberger (1966) and Spielberger, Gorsuch and Lushene (1970) have developed the trait-state concept of anxiety wherein trait anxiety is the disposition to respond anxiously, and the state anxiety is situational.

The state anxiety, mathophobia, explored in this present study, is defined by Mitchell Lazarus in an article in *The National Elementary Principal* (1974) as follows:

> Mathophobia is an irrational and impeditive dread of mathematics. For any of a variety of reasons, a student can develop this emotional and intellectual block, making further progress in mathematics and closely related fields very difficult ...
>
> Mathophobia can arise at any time during a person's school years. Once it appears in full force, it is unlikely to abate spontaneously ...
>
> By the time a student leaves school, the chances are good that he will have acquired mathophobia at one point or another during his education.
>
> Very little is known about mathophobia, apart from the unrecorded personal experience of vast numbers of people. There has been practically no formal research on the topic, despite the widespread occurrence of the problem. Dyslexia, in contrast, has received far greater attention in research, even though it is probably far less common in the population. Indeed, until Jerrold Zacharias coined the term a few years ago, mathophobia, though recognized by many individuals, had gone without a name. The word was an apt choice; nearly everyone who hears it or sees it in print knows immediately and exactly what it means ...
>
> It is important to note that mathophobia is distinct from dyscalculia — an inability to perform the simplest arithmetic operations — in at least two ways. First, mathophobia is very common in people who are fully capable of elementary arithmetic (although they may dislike it); and, second, it has an emotional component in the anxiety surrounding mathematics, which is not part of dyscalculia.

> Overall, mathophobia affects many more people than dyscalculia does, and reaches much farther in its effects.
>
> How many people are mathophobic? There are no hard data on this question ... It is likely that mathophobes outnumber by far those who are comfortable with mathematics. ... the company of mathophobes include a great many people who are otherwise well educated: professionals of many kinds, businessmen, leaders in government and industry, some social scientists, and more than a few educators, including, perhaps, some teachers of mathematics at the more elementary levels (Lazarus, 1975, pp. 16-22).

In this extremely important article, Lazarus makes several points that should be emphasized in connection with reducing anxiety about mathematics at any level of the educational system and improving mathematics skills in our population.

In connection with a statement: "Mathophobia is a highly communicable condition, to which the young are especially liable" (p. 22), Lazarus says that almost no one will admit to being illiterate, but in our culture it is acceptable to admit to being mathematically illiterate.

He points out, that this custom is so widespread that it is communicated from generation to generation. In addition, there are many teachers who are mathophobic, particularly in the elementary grades, which leads them to communicate a distaste for the subject, even if their knowledge is adequate for the grade level they are teaching.

The mathophobic student who reaches the university level and who also has a high level of trait anxiety faces a serious challenge. In several studies reported by Gaudry and Spielberger (1971) the effects of anxiety level on educational achievement point to the debilitating effects of anxiety. Their findings indicate that anxiety interacts with intelligence to hamper all but those students with the highest intelligence.

Pertinent to this present study are the causes of failure to learn, in this instance, mathematics, which eventually build to the distaste and extreme anxiety that is evident in so many students.

Results of ongoing research into how our brains work may point to such causes and to improved teaching methods.

Since 1961, when the first real opportunity came to study a human split brain, research has demonstrated that human beings are the only mammals whose left and right brains are specialized for different functions. Man not only has two brains, but unlike other animals he has two brains that operate in different modes, capable of reinforcing each other.

Roger Sperry (1975) describes the hemispheric functions as follows:

> The left is highly verbal and mathematical, performing with analytic, symbolic, computerlike, sequential logic. The right, by contrast, is spatial and mute, performing with a synthetic spatio-perceptual kind of information processing that cannot yet be simulated by computers (p. 31).

He underscores our bimodal capacity to think by describing the activity of patients whose hemispheres have been disconnected, saying:

> It is most impressive and compelling to watch a subject solve a given problem like two different people in two consistently different ways, using quite different strategies — depending on whether he is using his left or his right hemisphere. (p. 32)

New differences between the hemispheres are emerging as research continues. Eran Zaidel of Caltech believes that the difference between the hemispheres is a matter of specialization, not inherent differences. This, of course, is substantiated by the fact that very young children who lose the use of the major hemisphere are able to speak. His research is indicating that the language capacity shifts to one hemisphere by degrees at different ages.

Some of these findings are that reading and writing are separate skills; verbal symbols differ from numerical symbols; objects are named in ways different from colors; visual configurations that arouse sensory or tactile associations are processed differently than purely visual configurations (Gardner, 1975).

Persons with unusual memories and the amazing capacity to remember that some subjects show under hypnosis have indicated that the human brain stores huge quantities of information. It was not until Dr. Wilder Penfield, a Canadian neurosurgeon, published his findings that the extensive memory storage of the average human brain was documented.

His patients recalled in detail such events as a whole symphony heard many years before or a thrilling childhood experience, all elicited by the gentle stimulation of the cortex with minute electrical current.

Stimulation of different areas of the cortex evokes different memory patterns — here sound, there light, and yet another place, a motor response. It is hypothesized that every bit of information that our senses have picked up from our environment during our lifetime is available somewhere in our brains. And it can be, as indicated by the work of Lashley (1950, 1963) that memory is everywhere in our brains. His memory theories are explained by the hologram, for which a British engineer, Dennis

Gabor, was awarded a Nobel Prize in 1971. Wherever or however memory is stored in our brains, a memory is difficult to erase once established, contrary to the opinion of many students in examinations.

> Indeed, a case can be made that, together with scar tissue on the body, memories in the brain are the most durable environmentally imposed individual characteristic (Rose, 1973, p.193).

In its totality, we are unaware of the potential of the human brain. We know that we have infinite memory storage capacity, if we learn how to use it. We know that we have two separate brains with the potential to reinforce each other by learning in two modes.

> The message that emerges from the findings on hemisphere specialization is that our educational system and modern society generally (with its heavy emphasis on communication and early training in the three R's) discriminates against one whole half of the brain (Sperry, 1975, p.33).

How do we take advantage in our educational system of eidetic imagery or memory which research indicates is a capacity of up to "... 50 percent of primary-school-age children" (Rose, 1973, p.214). By puberty, this capacity is rare. Is this ability somehow related to memory consolidation in the very young? Has nature equipped the human child with a special learning tool that we should learn to use?

To what extent does our lopsided educational emphasis interfere with learning, or create learning disabilities in our children that lead to failures and such products as the mathophobic student?

Suggestion envelops us. It is such a commonplace that we are rarely aware of it. In its many guises, it is a primary tool of the socialization process.

Our manners, mores and values are molded by suggestion. Our attitudes, opinions, votes, buying habits and innumerable life decisions are subtly influenced by masters of the art of suggestion. We are the product of the "they" in *they say;* the "in" in the *in thing;* the persuasive innuendo in the voice of the zealot or commentator; the calculated artistry of the graphic artist or copywriter; and the subliminal shadings of approval or disapproval by significant others. Suggestion is as pervasive as the air we breathe.

The key to the effectiveness of suggestion is that we are influenced and we absorb information unconsciously and effortlessly. Because of the strength of a single impression or through repetition ideas become part of us and we are unaware of being shaped.

In psychology, sociology, and education research on the power of suggestion has been pursued under many descriptors: modeling, incidental learning, peer, sex-role, and ethnic identification, etc.

The Rosenthal effect (Rosenthal & Jacobson, 1968) illustrates how powerful and destructive suggestion can be, and also how it operates unconsciously and subliminally.

The power of suggestion lies in our lack of attention plus the capacity of the human brain to receive, process, evaluate and respond to a variety of stimuli apparently simultaneously, and at the unconscious level. The complete operation of the autonomic nervous system illustrates this capacity.

But in addition to the autonomic processing to which a person is not attending, the brain is also recording and storing the most minute details of the present environment to which the person is also not attending, while he may at the same time be involved in conscious, complex motor and cognitive activity.

In addition to the unconscious process of storing all of the information in the environment, the brain appears to have unconscious processes for problem solving and recall. In recent memory research, it has been ascertained that when asked a question the brain makes a memory scan at the rate of approximately 30 items a second. Sternberg (1975, p.27) says, "In addition to the high speed, the scanning model strains common sense because the subjects aren't aware of the search."

In Suggestopedia, Dr. Georgi Lozanov, (1971) appears to have a convergence of a number of techniques which reduce anxiety while enhancing learning.

His method uses suggestion at both the conscious and unconscious levels which he designates as Plane I and Plane II.

Plane I involves the use of rational persuasion and can be related to the acceptance of suggestion or learning that takes place in the major (left) hemisphere of of brain.

Plane II is designated as our unconscious mental processes. A subject's reaction to influences of the second plane are called "non-specific psychic reactivity." In this plane, the perceptual mode is said to be in the marginal field between the conscious and unconscious. The response of this plane equates to the imaginative, emotional, intuitive, holistic perceptual mode of the minor (right) hemisphere of the brain.

Our non-specific reactions at the unconscious level which lead us to accept or reject suggestions are those communicated by body language — posture, gestures, the gait and other imperceptible ideo-motor movements. They would also include the expression in the eyes, the manner of speech and tone of voice, as well as the perceived authority of the information source and the level of expectation. In addition, the environment in which

suggestions take place influences responsiveness and is considered extremely important.

The means of suggestion that are used in suggestopoedia are authority, infantilization, double plane, intonation, rhythm, and concertlike pseudopassivity.

There are parts of the suggestopoedic method which can be adapted such as the active and passive seances, infantilization, role-playing and dramatization. It is questionable, however, whether hypermnesia will occur if the method is not used in its entirety.

> It can be assumed that the suggestopaedic system can be used successfully in courses of instruction in widely differing subjects, provided all the principles of suggestopaedia are duly observed (Kitaygorodskaya, 1975, p. 24).

For these reasons, an experimental class was taught to explore methods of reducing anxiety in students learning descriptive statistics using techniques to enhance learning, with emphasis on one method developed in Eastern Europe, called Suggestopedia (Lozanov, 1971).

Method

Subjects

Ten graduate students in the School of Education, California State University, Northridge, between the ages of 24 and 50 ($\bar{X}$ = 34.6) participated in the study. Students in a core course, Fundamentals of Measurement (Educational Psychology 401), were asked to volunteer for ten class sessions to learn the descriptive statistical portion of the course.

Volunteers were solicited on the basis of their subjective feelings of anxiety as related to the course content (mathophobia).

The purpose of the experimental class was explained as seeking anxiety-reducing techniques for teaching statistics. Students were assured that the experience would in no way affect their course grade although they would be tested on the experimental course content.

Students were asked not to volunteer if they knew of any reason why they would have to miss any of the ten class sessions.

All of the students in both the experimental and control groups were asked not to read or study their assigned texts for the five-week period of the experiment.

Twelve students volunteered, eleven women and one man. One student attended the first class meeting and did not return to the class. Another student did not attend four class sessions and was asked to return to the main class. She subsequently dropped the class entirely. Ten students, nine women and one man, completed the ten experimental class sessions.

Procedure.

All students enrolled in the class at the first meeting were asked to complete the *Ipat Anxiety Scale Questionnaire* (Cattell & Scheier, 1963) to provide a comparison of the general level of anxiety in the control and experimental groups.

The *Ipat* is a non-threatening questionnaire that can be completed in less than ten minutes and scored in one minute. Extensive use in research has established that this test is a good measure of general anxiety (Spielberger, 1972).

A small classroom was selected and equipped with four small tables. The tables when combined enabled the students and the experimenter to sit in circular fashion around one large table. When class activities required it, the small tables allowed groups to separate and work independently.

At the initial experimental class meeting the students played children's games: Tiddly-Winks, Jackstraws and Darts. They also participated in two word activities: a 1-minute Scrabble game and each completed a *Reader's Digest, It pays to Increase Your Word Power* quiz.

The students divided into three groups and each group played all of the games competing within their groups.

The intent of the experimenter was to introduce infantilization and build comaraderie characteristic of the Lozanov (1971) method and desensitize the idea of statistics, (Paul & Gordon, 1973; Wolpe & Lazarus, 1966).

The concepts of universe, population, set, sub-set, sample, random sample, biased sample, variable, data and scores were related to the game playing, the sub-groups of the experimental class and to the class as a sample of the total Educational Psychology 401 class from which it was selected.

The idea of experimental control was introduced when one group elected to play Jackstraws on the floor while the other two groups played at tables.

The final tallying of the individual and group scores allowed for the introduction of the need for accuracy and system in the collection of data and for a preliminary discussion of the relationships of statistics to a sample and parameters to a universe.

At subsequent class meetings, activities were planned to continue the atmosphere of play. The students were introduced to the frequency distribution by being given materials to

manipulate. This was done by the use of washable colored pens and M&M's on large sections of checkered paper. They created various frequency distributions by drawing the abscissa and the ordinate and placing the M&M's as markers for scores at the proper intervals along the X-axis. The data supplied resulted in distributions that were both normal and skewed. By changing the intervals along the X-axis the result of the grouping of data was also illustrated.

At another class meeting the students were asked to bring 100 pennies. These were used to construct replicas of the normal curve with each half of the curve containing 50 pennies. A number of different curves were constructed using standard deviation units of two, three and five pennies while maintaining 34 pennies (34%), 14 pennies (14%) and 2 pennies (2%) as representative of the percent of cases that fall in the standard deviation intervals as they move away from the mean.

Both of the above activities were designed to maintain the mood of infantilization and to involve the minor hemisphere (right brain) skills of spatial and tactile learning.

A persistent effort was made to introduce frequent review of material which required students to recall concepts, associate ideas and verbalize (Gagne & Smith, 1962) terms to reinforce learning.

This was also accomplished by means of games. In one game each student had a term placed on his back and he had to discover what the term was by asking questions of the others. The interchanges not only forced the use of statistical terms but student responses indicating that the questioner was "close" encouraged them to associate ideas and recall terms related to the first one mentioned.

Another review game reversed the above procedure. A student was given a definition of a term and all of the others tried to determine what it was. This assured that every concept was correctly reviewed when the definition was read. The weaker students learned from the more able students without being singled out and they all learned from each other. Most importantly, the teacher wasn't teaching — they were playing.

Much emphasis was put on review. The pattern that is part of the Lozanov (1971) method to repeat material three times was part of the class method. In accordance with theories of memory consolidation (Rose, 1973, pp. 189-191) memory becomes fixed in a period of thirty minutes to three hours. The effort was made to reinforce all concepts introduced in the class several times from the beginning to the end of the period with at least three repetitions in different forms.

Material was prepared by the experimenter to illustrate key concepts and to serve as work sheets and also for the purpose of

eliminating note taking which can interfere with learning (Schultz & DiVesta, 1972). This material was extrapolated from several texts and presented in the most basic manner possible. The intention was to minimize confusion and the anxiety that many statistics tests elicit and to provide small memory cues. For example, the illustration of an arrow-like skewer to point to the named direction of a skewed distribution and a sea-saw clue to the median.

Lozanov's suggestopoedic method uses the concept of role playing to reduce anxiety. It is thought that adults may be reluctant to show lack of knowledge in front of others. Bancroft (1975) reports that in suggestopedic language classes students are assigned fictitious names and they remain anonymous throughout the class.

The need to assign permanent roles to the students in this experimental class did not appear necessary; however, the concept of role playing was introduced into class projects that were performed in groups.

Problems were presented to the class for solution that were related to the practical use of statistical concepts in "real world" situations (Bloomer, 1974; Mallen, 1973). They were asked to confer in small groups and discuss how they could solve each problem. After each group had worked out its solution, the different solutions were presented to the whole class in the form of a "mini" report.

Again, this technique implemented sharing of ideas and knowledge and required the oral expression and use of statistical terms both within the groups and between all of the students when the final "mini" reports were submitted.

Authority on the part of the instructor is another concept important to the suggestopedic method. In this experiment, the experimental teacher felt that it was important to relate to the students as one who had shared their experience of anxiety with respect to statistics. "Authority" was used in the sense that the experimental class instructor had been through their experience, had passed several statistics courses with a creditable grade, and had developed an interest in and a modest working ability to use statistics.

Relaxation sessions to review material were used both with and without music to simulate the active and passive seance sessions of the suggestopedic method.

Results

Evaluation was based on a comparison of the performance of the experimental and control groups on the regular mid-term examination in Fundamentals of Measurement (Ed Psych 401).

A total of 27 students took the midterm examination: 10 in the experimental, and 17 in the control group.

Table 1 gives the results of the two groups on the two portions of the examination together with the results of a t-test on the following null hypotheses:

I) That there would be no significant difference between the means of the two groups on the 17 questions relating to the class content of the experimental class (descriptive statistics)

II) That there would be no significant difference between the means of the two groups on the 38 questions relating to the class content covered subsequent to the experimental class.

Null hypothesis I was rejected at less than the .01 level; experimental class students did significantly worse than the control students on the experimental class content.

Null hypotehsis II was accepted; the experimental class students did as well as the control students on material after the experimental class.

While the results appear to indicate that the treatment was not effective in the experimental class, a number of factors should be noted in relation to these results. Eight of the ten students in the experimental group had had no previous statistical courses. One student had always needed a tutor to pass mathematics classes and the tenth student had previously flunked a graduate class in statistics.

By comparison, the control group was comprised of seven students with previous statistical training, two mathematics majors, and only six students with no previous statistical experience.

TABLE 1

Means and Critical Ratios for Two Groups On Two Parts of Midterm Examination

Portion of 65 Questions	Control N=17	Experimental N=10	t-test
17 Questions Experimental Class Content	$\overline{X} = 10.88$	$\overline{X} = 6.88$	3.11*
38 Questions Subsequent Class Content	$\overline{X} = 32.41$	$\overline{X} = 30.50$	.98**

* $p < .01$
** N. S.

The results of the *Ipat Anxiety Scale Questionnaire* administered on the first night of the class cannot be compared because the control group added students who were not tested. The anxiety level of the experimental group had a mean of 4.5 on a Sten scale of 1-10 indicating about an average level of general anxiety. There was no significant difference between this group and the original control group except for the level of anxiety (mathophobia) felt by the experimental group towards statistics as indicated by their desire to volunteer for the class.

The success of the experimental group with respect to the non-statistical content of the course (38 questions) raises the question of a possible anxiety-reduction effect due to the previous experimental desensitization treatment since the non-statistical portion of the class was taught later.

There is also the confounding question of what effect the knowledge that they would not be graded on the 17 statistical questions covering the experimental class content had on the examination behavior of the mathophobic students. This may have lowered their achievement.

Discussion

In evaluating the results of this experiment to reduce anxiety in mathophobic students, it is most important to consider the class experiences and attitudes of the students.

The first meeting of the class was a remarkable success. The complete ludicrousness of playing Tiddly-Winks in a graduate class in measurement created an atmosphere of relaxation and set the tone for the class. A radio playing softly while the students played games diminished the classroom feeling, but it could hardly be heard above the laughter.

The students appeared to be caught up in the role of being "kids" again, but they were learning. Upon the prompting of the experimenter, the class began to use descriptive statistical terms, calling themselves a "sample" and a "subset", and wondering if *that* "population" (the main class) was having as much fun as they were.

The intention of the experimenter to use Lozanov's (1971) infantilization and desensitization (Wolpe, 1966; Wolpe & Lazarus, 1966) and incidental learning appeared to have been effective.

As the students left the class there were no signs of anxiety and they appeared exhilarated and relaxed. They expressed their relief and pleasure that this was the way they were going to learn. They evidenced that learning had taken place by using statistical terms in jest, but properly. Several of them said they couldn't wait to get home and tell their husbands what they had done in class.

The mood of relaxation continued into the second meeting and there was good response to the relaxation session which was an imitation of Lozanov's active seance (Bancroft, 1975).

The class began to slow down and revert to the atmosphere of a traditional classroom when one student had no idea what an arithmetic average was and knew nothing about squaring a number. This one student consumed hours of class time. In an effort to help the student, the only recourse was to attempt to turn the situation into a learning experience for the other students. They each tried to help with explanations, and possibly reinforced their [illegible]etention.

Undoubt[illegible] inexperience of the experimenter was at fault in his situation [illegible] lacking the skill to keep the class moving past this obstruction and maintaining a playful and relaxed atmosphere.

Despite the initial request to attend every class made to the students when they volunteered, there were absences which necessitated backtracking on material. Again, the effort was made to turn this into a learning experience for the other students by asking them to explain the material covered previously to the absentee. In a large class, perhaps absences can be ignored. In this small group and with the plan of sub-groups working together, the absences were a disadvantage.

Extreme difficulty was encountered in the preparation of the music for the passive seances. While several of the concerti grossi in the Boroque style recommended by Bancroft (1975) were secured, musical knowledge and technical skills were not available to handle excerpting the needed portions and combining them on one tape.

In one critical review of the Lozanov method, Turkevich (1972) says that musically aware students might not be good subjects. I believe however, that this could depend upon the attitude of the individual.

The class evaluations completed by eight of the ten students present on the last night of the class were generally favorable and indicated that the class had been helpful.

There were a number of valid criticisms made that related directly to the inexperience of the teacher in teaching and in teaching statistics.

Reports written at a later date were again generally favorable, but several students did a complete aboutface in their evaluations and characterized the experimenter as impatient, hostile, not caring, brutal, severely lacking in knowledge of the subject and not knowing anything about how to teach mathematics. These reactions agree with the findings of Aiken and Dreger (1961) who point out that students who dislike mathematics tend to generalize their feelings to their mathematics instructors.

There was no criticism of the innovative techniques. Many of the students had found them helpful and expressed disappointment that they had not been used more.

Many of the students said that the attitude of the instructor in identifying with the students as being an expert and experienced mathophobe was helpful to them. For the majority of the class this appeared to help in reducing their anxiety. There were a few students who criticized this in their second evaluations saying it had made them anxious.

Three important weaknesses in this study must be discussed:

In reviewing the test which was the criterion measure of this experiment, it is apparent to the experimenter that the test was given in an entirely different language than that which was used in the experimental class, although the same concepts were covered. The experimental class learned "baby talk" statistics, and the control group learned in an entirely different language. Under the test conditions, it is possible that the highly anxious experimental students were unable to translate.

The second weakness was the disparity in the mathematical skill of the students in the experimental class. A mathematical illiterate was in the same group with students with adequate number skills, although they were anxious about statistics. While one would not anticipate that a student in a graduate school would be mathematically illiterate, an ability check should be a prerequisite for admittance to any future anxiety-reducing experimental class.

The third, and possibly the most critical point that must be made with respect to the possible success of the suggestopoedic method is the inherent difference between Eastern European students on whom these methods were developed and students in an American university. Students in Eastern Europe trained under Soviet methods are more conforming than are Americans. They are also more highly disciplined and because only those who perform well may continue their education, they are possibly more motivated. American students are demanding and critical and very independent — they are individuals first and students second. As discussed by Aiken (1970, p.558) they will even resort to dishonest means to pass something they dislike — a behavior rare in Soviet countries because of the importance of the opinion of the group. Just getting through or beating "the system", not an uncommon attitude among American students, would not provide a climate consonant with the suggestopedic method. In particular, persons trained as teachers and counselors — trained to lead and direct others — might find the passive attentiveness required by the method difficult to master.

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35 1/

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SOME OBSERVATIONS OF BEHAVIOR IN A SUGGESTOPAEDIC FRENCH LANGUAGE CLASS

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Abstract

A suggestopaedic course of French language instruction for Canadian civil servants is described in terms of student behavior and student-teacher interaction. The observations focus on the changes emerging over the 26 day period of the course. It is suggested that these change patterns differ from those in "traditional" teaching methods, and that they demonstrate behavioral dimensions in need of suggestopaedic research.

The Public Service Commission of Canada has as one of its functions the training of unilingual federal civil servants in the second official language of the country. Within the Bureau of Staff Development and Training of the Commission, an experimental unit has operated since 1973, applying suggestopaedic principles to the instruction of Anglophones in the French language. The following is an account of behavioral observations made daily during three hour classes over the 26 day period of the course. The observations were made during the fall and winter 1975.

The observations were made on an incidental basis; that is, no criteria or categories were previously established. The guiding framework providing the observational bias was the theory of suggestopaedic teaching as outlined by Lozanov (1975a; 1975b; 1975c). Some general observational categories, however emerged from "impressions" which became integrated as the course progressed. Some of these impressions were later in the course checked against the perception of students in short and informal interviews. The material from these interviews and observations has thus clearly only anecdotal value, but has also served as a basis for a critical discussion of issues and questions arising from the suggestopaedic process (Fuerst, 1976b).

The first few days of instruction were characterized through a great deal of uneasiness on part of the students. Most of them appeared rather tense, and different individuals gave different signs of emotional discomfort and anxiety, such as excessive hand-wringing, restlessness and giggling. Depreciatory remarks were introjected in "stage whispers", puzzlement shown over the formal and distant bearing of the teacher and the unit director, particularly during the latter's short welcome speech in

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French. Confusion and anxiety was expressed, largely during breaks over the general lack of information about the training program. Performance in class was generally cautious, and determined by a great deal of self-consciousness.

With growing familiarity of the classroom routine, described elsewhere by Racle (1975), a marked change in the general behavior patterns could be observed. Beginning on the 4th day, and becoming clearly established on the 5th, a much more positive atmosphere had emerged. Students had largely (in specific situations) lost their self-consciousness and had begun to make use of themselves in the communicative situation. Some students had begun to use alternative means of communication when frustrated by their ignorance of French. Some would simply slip the English expression in, or try to get messages across by acting, or through gestures. Individual differences were observed when students wanted or needed information. Some students turned to the teacher, others to fellow students, or simply indicated their frustrated state by shrugging their shoulders, thus passing the responsibility to continue the communication to the other person. Uniformly students became increasingly cooperative and also quite skillful in "guessing" the meaning of words used by the teacher for which English equivalents had not yet been given. This highly positive involvement of individuals shaped the dynamics of the whole group, and was demonstrated very clearly through the enthusiasm shown when the class was visited on the 7th day by another teacher who engaged the class in a conversation about the dialogue currently going on. This enthusiasm had the quality exhibited by learning children who have found the opportunity to "show off" their skills in a different situation. Consistent with these positive changes could be seen a great deal of spontaneous and extemporaneous behavior going beyond behavior demanded by the narrower context of the dialogue.

Around the 9th day a new dimension in the interaction pattern of the class began to emerge: friendliness on a personal level became markedly greater, and directions of these expressions appeared to remain rather constant over the whole observation period. Congruent with such an increase of personal involvement came an increased spontaneous exhibition of individual personalities; that is, students became increasingly "themselves". One particular observation may highlight this. When students had to converse in pairs, one student at the beginning of the exchange showed extreme anxiety and psychological discomfort. She appeared extremely self-conscious, grimacing and forcing her words out in disconnected chunks. After a few exchanges, however, she appeared at ease, talking nearly fluently and no longer grimacing. She appeared even more relaxed and

38

spontaneous than at times when she had been observed speaking English during breaks. With individuals behaving more spontaneously and following the direction of inner processes and their own needs rather than reacting with stereotyped role behavior, the group's identity began to emerge. Responding to, and managing a "deviant" and disruptive behavior of individuals began to appear by this time as a constructive aspect of the dynamics of the group. Disregarding undesirable behavior was done matter-of-factly, and without hostility or aggressiveness. In such, as in other situations, the class imparted the feeling of great coherence, emerging from individuals acting in concert.

By the 12th day students had become much more assertive when in difficult situations. If we interpret assertiveness as a state of greater emotional freedom (Lazarus, 1971), such a development must be judged as conducive to learning as formulated by suggestopaedic theory. Together with this increased assertiveness on the part of the students, a shift in the behavior of the teacher was also observed. With no loss of control over the teaching process the teacher tended to exercise her authority on a more nearly equal and individual basis, thus allowing the student to develop his confidence on a less dependent and more integrated and mature level. Related to this development, it would appear, was the emergent ability of some students to respond to personal characteristics of other students. Thus role-playing had become more than a rehearsal of a role suggested by the teacher. The students began to respond to the inner reality of their social situation, which could probably be seen by the fact that their assertiveness was also extended to include the teacher.

An interesting episode on the 17th day demonstrated the crucial part that the teacher's behavior has on the learning process in the class. For some reason unknown to the observer, the performance of the teacher on this day was at a less effective level than it had been so far. Her performance on this day was less alert and sensitive, and in a general way best described as the behavior of a person "having a bad day". Consequently the atmosphere in the class was drastically different. Students showed a lack of their usual enthusiasm. Responses were slower, and a fair amount of absentmindedness was evident. That something was different was obviously recognized by the students. During the break and after class, remarks on the lower quality of this day's session were made. Interesting, however were the remarks attempting to explain this condition. None of the students seem to attribute their own changed and relatively inferior performance to a change in the teacher's behavior; on the contrary, one student remarked that the teacher had looked "put off" with the class, because they had done so poorly, and

the other students agreed with this. On the following day the situation was back to what it had been before this interlude.

During the last three days, a slight slipping in the students' performance became apparent. This may have been due to fatigue, or the effect of the anticipated end of the course. This change could be seen in a certain slowness and show of complacency. This slightly negative effect, however, disappeared completely when students started to prepare for the final presentation, which each class had to give before the total assembly of students and teaching staff.

From the individual interviews it became quite clear that all students were highly positive in their assessment of the total experience. One young woman reported that every morning she looked forward eagerly to come to class, and that her present state reminded her of her early school days, when learning and school activities were a great source of excitement, something never recaptured in any learning situation until this present language course.

When asked to identify factors they thought contributed most to this positive experience, students uniformly made reference to the quality of the teacher. The majority of the remarks about the teacher dealt with the teacher's "authority" as interpreted by Lozanov (Racle, 1975). It has to be added here, that when asked, not one of the 12 students showed any familiarity with concepts of suggestology. From the interview it appeared clearly that at least these students attributed the positiveness of the course to the teacher rather than to the methodology.

Many of the elements reported from this unstructured observation and interviews undoubtedly can be found in many "traditional" teaching situations. What this paper, however, may have accomplished is, that by describing some aspects of a suggestopaedic course, it has provided a description of the behavior pattern of a group over the time it was exposed to the suggestopaedic process. A comparison with spot-checked observations in the other suggestopaedic classes of the experimental unit has found very similar behavioral characteristics, which were not found when observing students in the regular government language training center.

Accepting the anecdotal character of these findings, and other methodological limitations, the value of such a descriptive treatment of a suggestopaedic course of instruction lies in the demonstration of behavioral dimensions within the suggestopaedic context which urgently needs further planned and systematic observation and research.

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Suggestopedia: A transpersonal approach to learning

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Abstract.

This paper reviews the historical background of learning theories, from Freudian, behavioral, cognitive, gestalt, humanistic and transpersonal to suggestopedia. Transpersonal psychology is seen as emerging from the behavioral-humanist clash, with suggestopedia as a pragmatic amalgam of the two.

Introduction

Whenever researchers set out on a new course, it is of primary importance for them to have a proper theoretical perspective on their undertaking. Certain questions must be considered: Does the new effort fall within established boundaries of thought? Is it an extension of well-known ideas, or is it an entirely new attempt at formulating assumptions about what is possible for mankind to achieve? SALT program developers of course recognize the importance of acquiring this perspective. Thus, this paper sets the stage for the emergence of SALT by providing a brief summary of the tenets of several schools of psychology, then places Georgi Lozanov's contribution to learning theory where it belongs — squarely in agreement with the concepts developed by the emerging school of Transpersonal Psychology.

Synthesizing for Progress

One who studies learning theory today in any teacher training institution will undoubtedly be exposed to many theoretical approaches during the educational psychology courses he takes. Yet there is a flaw to this "expose students to a little bit of everything" custom: little attempt is made to synthesize these different theories into an instructional approach that is workable at the public school classroom level. Worse yet, courses describing these various theories are frequently taught as if accepting one of them constitutes a life-time devotion. One is supposed to choose sides; that is, he is expected to adopt a set of tenets as articles of faith, a catechism to be repeated in times of travail (the emergence of evidence which conflicts with the chosen theory). This is particularly true at the graduate level, where entire graduate faculties have specialized in applying a particular school of psychology to education. Tom Roberts (1975) notes:

> ... If we look back at the rise and fall of educational psychologies and the rise and fall of various colleges of education, we see that frequently certain schools staked out a new educational psychology and built much of their reputation on developing it. A good part of the reputation of Teacher's College at Columbia University was due to faculty members who were influential in the application of Freudian psychology to education. Stanford, Kansas, and other universities are making themselves well known in teacher education by applying behaviorism to education. Humanistic psychology applied to education is important at the college of education at the University of Massachusetts and at the University of California at Santa Barbara.

At other universities which have not staked out their territory to such a degree, specialization, not synthesis, is still the name of the game.

The intent of this paper is not to provide any sort of comprehensive overview of the subject of learning theory. Rather it is to review just enough of the familiar tenets of several schools of learning to demonstrate the necessity for innovative teachers to synthesize (to think across, rather than down, traditional theoretical lines) and to point out some similarities and differences between suggestopedic practice and those theories of learning which have waxed and waned through the years.

Established Ideas In Educational Psychology

Several schools of thought have established themselves at one time or another as influential forces in American education. Proponents of these schools have devoted themselves, in time of fashion, to a centrally controlled theory of intelligence (genetic determination of IQ), Freudianism, behaviorism, Cognitive Psychology, and Humanism. All of these theories have contributed in some way, though Humanistic psychology (due primarily to its lack of organized program development procedures) in only the smallest manner, to a mass, societally-suggested norm which has inhibited recognition of the full range of man's potential for development.

Centrally Controlled and Psychometric Theories of Intelligence and Achievement

The centrally controlled theory of intelligence describes intellectual capacities as emanating largely from the gene, unfolding during the course of maturational development, and representing an underlying quality of mind (the "g" factor) called intelligence, which is believed to be receptive to measurement by psychometric tests. These psychometric scores are distributed generally according to the normal (bell-shaped) curve, and, ac-

cording to researchers such as Arthur Jensen, some American ethnic groups tend to score lower on these tests than the national average. Jensen does state that a reasonable hypothesis explaining the disproportionate representation of these groups in the lower half of the curve can be attributed to environmental rather than genetic factors. In fact, Jensen quotes research by Wolf which indicates a multiple R of .76 between 13 environmental variables and "intelligence." The transpersonal educator believes that the IQ tests themselves come nowhere near measuring mans' innate capacity for achievement and believes in the possibility of transcending every limitation previously placed on his developmental capability.

An offshoot of this psychometrically-based position, though certainly not attached solely to genetic factors, are expectations for achievement based on the normal curve. As described by the normal, bell-shaped curve, the majority of scores are near the average, while the frequency of very high or very low scores drops off rapidly at the extremes. In grading procedures based on this hypothetical, symmetrical distribution, a small percentage of the students receive an A, a larger percentage receive B's, the majority receive a C, a percentage approximately equal to the B's receive D's and a few receive an F.

Benjamin Bloom (1968) has stated:

> We have for so long used the normal curve in grading students that we have come to believe in it ... There is nothing sacred about the normal curve ... If we are effective in our education the distribution of achievement should be very different from the normal curve. In fact, we may even insist that our educational efforts have been unsuccessful to the extent to which our distribution of achievement approximates the normal distribution.

Bloom further underscores his belief with the statement that:

> The grade of A as an index of mastery of a subject can, under appropriate conditions, be achieved by up to 95 percent of the students in a class.

Freudianism

Sigmund Freud's psychoanalytic theories, though now considered dated, exerted much influence upon members of the mental health professions and though their opinions, also upon teachers for many years. This despite the fact that his hypotheses concerning motivation and conflicts between motives were untested and frequently formulated in such a manner as to be untestable.

Freud's basic principles included psychic determinism and repression. By psychic determinism, Freud meant that all of an

individual's behavior has causes which may be discovered in his early childhood experiences; that is, the basic direction of an individual's life is determined very early — by the age of five. Such behavior patterns become permanent unless altered through psychoanalysis. Thus, Freud viewed man as being trapped by a cause and effect sequence: he is forced to respond to the here-and-now in terms of past influences — buffeted as he supposedly is by many drives, impulses, and motives emerging inexorably from the unconscious. By repression, Freud meant that people exclude from their conscious awareness feeling resulting from stressful experiences. The repressed feelings are stored in the unconscious, only to emerge later in life, causing emotional problems (neuroses).

Teachers have been taught that children with social adjustment or learning problems are that way because of such deep seated neuroses. Teachers have also been exposed to the unproven idea that unless the causes of neuroses are dealt with, lasting changes in behavior cannot occur. According to Freud, if symptoms alone are treated, other more serious ones may appear.

As a result of Freudian influence, teachers have been warned to:

1. Not use intrinsic awards for purposes of motivation because these somehow encourage undesirable attitudes.
2. Not demand higher academic performance until the emotional blocks have been resolved since one must be cured before he can learn.
3. Not provide highly structured classroom settings because children will be unable to act out their frustrations.
4. Not use aversive techniques or withhold pleasure when reacting to misbehavior because children may feel rejected.

Transpersonal educators would disagree with the Freudian assumption that a person can be only what his early childhood experiences have made him. We would say that although each person may usually function at only a small percentage of his capabilities, he nevertheless has the freedom to become much more than society has believed he ever could.

The transpersonal educator would take a position most critical of Freud's description of the unconscious as a repository of frustration, just waiting for a chance to boil over and influence one's life in a negative way. In the manner of Carl Jung, we would respect the many positive effects (intuition, dream-inspired insights, occasional flashes of extra-sensory perception) that may flow from levels of the mind existing beneath the range of normal, working conscious awareness. Freud's limited view of the power available there still causes many people to be wary of undertaking the personal task of examining different aspects of

their consciousness. Fortunately, his influence is passing from the American educational scene.

Behaviorism

Behaviorism, usually associated with B. F. Skinner in this country, has its antecedents in the theories of classical conditioning developed by Ivan Pavlov, the work of E. L. Thorndike, and the Associationism of Clark Hull. Although it has become fashionable, with some good reason, in Humanistic education circles to criticize this group of psychologists for their somewhat dogged concentration on only a few of the variables affecting the learning process, it should be remembered that facility with technology and expertise in experimental design are most desirable attributes for researchers and program developers in any field. Behaviorists have not only that to their credit, but considerably more as well.

Ivan Pavlov, the Russian physiologist who won a Nobel Prize even before his classical conditioning procedures were developed, was the first real learning theorist. His basic research paradigm is well known. Pavlov began with the fact that a particular (later termed "unconditioned") stimulus (food) would bring about salivation in dogs — a purely reflex response. Following a bothersome series of "accidents" which he first tried to ignore (his dogs salivated to stimuli other than food), Pavlov re-directed his experimental efforts and spent the rest of his career attempting to discover the causes of such strange phenomena.

Pavlov presented food to his dogs in close succession with a "neutral" stimulus (bell tone); salivation of course again occured. Finally food was eliminated from the procedure; salivation occured after the bell alone. Thus Pavlov had demonstrated that learning (response to a stimulus other than the one which customarily evoked that response) occurs at a very simple (reflex) level. In his terminology, a neural bond had been formed between the "conditioned" (previously neutral) stimulus and the reflex response.

Pavlov extended the scope of his research and further explored many aspects of this type of learning. He delved fully into such subtleties of reflex learning as extinction (disappearance of learning unless the original unconditioned stimulus is again paired with the conditioned stimulus), generalization (learning to respond to stimuli similar in nature to the conditioned stimulus) and the reverse process, discrimination (learning to distinguish between the conditioned stimulus and similar but neutral stimuli).

The first American learning theorist, E. L. Thorndike also demonstrated that learning consists of connections between stimuli and responses. The noteworthy aspect of his work was

that it focused on fairly sophisticated tasks such as teaching a hungry cat to escape from a puzzle box, rather than upon the simple reflex responses studied by Pavlov.

Thorndike formulated three laws of learning: the laws of exercise, effect, and readiness. His law of exercise stated that association between stimulus and response will be stronger if they are paired more often. His law of effect held, essentially, that the law of exercise was only a partial descriptor of the way learning occurs. The mere repetition of a stimulus was not enough for the response to be learned. A reward was also necessary. His law of readiness held that physiological conditions within the learner had to be considered: his cats had to be hungry before they desired his rewards.

Clark Hull synthesized Pavlov and Thorndike. In his book, *Principles of Behavior,* Hull developed his own concept of habit strength and drives. Habit strength refers to the growth toward permanency of the connection between a stimulus and a response as they are associated more often. According to Hull, learning (development of habit strength) depends both on association and the reduction of whatever drive is satisfied by making the correct response.

B. F. Skinner, the person identified closest with Behaviorism in the public eye, has the distinction of being the most careful researcher, the most articulate, controversial spokesman *(Beyond Freedom and Dignity)* with the most far reaching social perspective *(Walden II)* of any individual in the Behaviorist camp. He espouses learning a wide range of human behavior patterns through operant conditioning, not by classical conditioning procedures or any of its off-shoots appearing in history between the two. The differences between his methods and Pavlov's are as follows: In classical conditioning, the conditioned response is elicited by the conditioned stimulus. That is, the subject of the experiment has no choice as to whether or not the response is given — it is a simple reflex action. The response makes no change in the environment. In operant conditioning, the response is emitted by the subject, who responds on the basis of a more complex series of neural "connections" involving deliberate decision making than, say, the salivation response. The subject operates on the environment in order to change it.

Skinner's theories are applied in the classroom for the purpose of modifying student behavior. This is accomplished by rewarding (usually by praise or some other form of attention) desired behavior and ignoring undesired behavior. Thus discipline problems are handled by ignoring disruptive behavior and being supportive of constructive behavior, under the assumption that withdrawing any set of attention or response to undesirable conduct coupled with being supportive of desirable conduct will re-

move any incentive for the student to stray. Concerning academic performance, if a pupil performs a task correctly and is immediately praised, the behavior leading to the correct performance is held to be more likely to occur again. In Skinner's system, poor performances would never be punished. In fact, Skinner sharply attacks an obvious shortcoming of much current instructional practice, that is, the aversive manner by which control is exerted.

> He states: The child at his desk, filling in his workbook, is behaving primarily to escape from the threat of a series of minor aversive events — the teacher's displeasure, the criticism or ridicule of his classmates, an ignominious showing in competition, low marks, a trip to the office "to be talked to" by the principal, or a word to the parent who may still resort to the birch rod.

Skinner also identifies other weaknesses in traditional teaching methodology.

As enumerated by Morgan (1974):

1. The lapse of time between action and reinforcement. Some exam papers are not handed back until days after they are written.
2. Lack of a well organized presentation of stages in teaching complex skills.
3. The relative infrequency of reinforcement. With large classes and split sessions the amount of reinforcement a teacher can supply to individual students is severely limited.

Although Skinner's descriptions of the faults of current educational practice are largely true and the remarkable success of most of his experiments cannot be denied, there is nevertheless considerable disagreement with his approach, both on applied and theoretical grounds.

Critics have noted that the details of his methodology, though quite successful under controlled laboratory conditions, are much more difficult to carry out in the classroom. Keeping an accurate track of behavior and determining whether to use a fixed interval reinforcement schedule, a variable interval reinforcement schedule or to exhaust the possibilities, perhaps a fixed ratio or variable ratio reward system would strain a teacher's record-keeping capacity (which is already overburdened), to say the least. Other critics have focused on "M & M cultures," in which nursery school teachers have rewarded young children with candy for correct responses. The feeling has been that the candy was digested but not the lesson material.

On a theoretical level, Humanistic and Transpersonal educators object to many of Skinner's ideas concerning the fundamental nature of man. Skinner believes that since man is totally a product of environmental forces beyond his control, he is therefore not accountable for his behavior. Skinner completely

rejects the notion of there being a subjective, autonomous layer of one's being. The myth of the "inner man" is presumably demolished — man's behavior is understood as being a parade of mere reflex responses to environmental stimuli.

Instead, the transpersonal educator would strongly advocate the scientific study of subjective experience, believing that such experiences are in fact the most important concerns of human beings. Anger, conflict, fear, love, pleasure, and the way they are experienced, not just the manner in which they are expressed, are of major importance to these critics. Another point of contention is the Humanistic/Transpersonal belief that the accumulation of scientific knowledge is more than just observing facts and recording data. Perception precedes observation, and perception is certainly not a pure reflection of "facts."

According to Morgan (1974):

> What the observer sees, what he records, and what he concludes are influenced by events in subjective experience: by the observer's goals, by his choice of questions, by his way of asking questions, by his methods of doing and organizing research, by his way of interpreting what he sees, by perceptual distortions, and by the number and nature of his unexamined assumptions. "Pure science" is not quite pure in the sense of being totally free of superstition and prejudice.

Cognitive Learning Theory

One of the early Behaviorists, Edward C. Tolman, began to lay the groundwork for another theory of learning when his experiments began to evolve away from classical behavioristic procedure. He eventually refused to accept Thorndike's law of effect, arriving at the position that reinforcement plays only a minor role in learning. Instead he proposed a learning theory based on cognition, which as we know involves perceiving, recognizing, conceiving and reasoning.

Tolman believed that learning comes during the continued performance of a task, as relationships are formed between environmental cues and an organism's expectations. As he ran his experimental rats through mazes, Tolman saw that they chose particular cues and features from their paths to serve as signposts or markers, then utilized them in finding their way about — thus forming a "cognitive map" of the task. The startling aspect of his findings was that, in some cases, rats unrewarded for 10 days but rewarded on the eleventh made far fewer errors in running a maze than did a group rewarded every day. Tolman concluded that during those trails when the observant rats received no reward, they must have developed a cognitive map describing the overall pattern of their maze.

Tolman's work was only a preview of what, for those days, were more provocative insights — generated chiefly by Wolfgang Kohler and Kurt Lewin. These men viewed learning as the regrouping of previous ideas and experiences, leading to new configurations of thought and insight — not as the formation of associations between stimulus and response.

Wolfgang Kohler presented chimpanzees with a complicated problem. In order to reach a banana placed outside their cage barely beyond arm length, they first had to learn to use a stick to lengthen their reach. In later experiments, the animals were required to fit two short sticks together in order to reach the banana. Kohler reported that the solution to the problem always occurred suddenly, as a flash of insight that happened after relationships were perceived.

Kurt Lewin believed that learning involves the make-up of a person's entire life space. That is, in order to understand how and why a person learns, solves a problem, or creates, one must know all about the things comprising his experience at a particular time. Learning consists of a reorganization of the world of experience. A classroom example illustrating Lewin's approach to learning is as follows. Suppose an art student is working on a painting. In order to arrive at the final product, he may adjust color mixtures in order to produce the desired shade, change tools (brushes), or ask for advice from the teacher. Most importantly, he relies on subjective experience — his own inner flow of images — which are undoubtedly influenced by all of the events occurring within the artist's everyday life space.

Phenomenology: The Basis of Humanistic Psychology

Dr. Merle Wittrock (1976), faculty chairman of the UCLA graduate school of education has a low key, wry view of both the Behaviorists and the Cognitive Theorists:

> Suppose the operant conditioner, with his years of observing rats in a Skinner box sees children learning in school. To him, they "bring their behavior increasingly under stimulus control through carefully sequenced, successively approximated discriminatively reinforced contingencies." And picture the cognitive psychologist, accustomed to observing children learn in school. As he witnesses a hungry rat learning to press a bar to get food. The rat becomes "an independent autonomous learner, using his previously acquired information processing strategies to construct adaptive, even creative responses to solve the personally important problem of getting food when one is hungry and alone in a foreign, technologically complex environment."

One of the foundations of Humanistic psychology is the belief that man's behavior is determined by the world as he

perceives it, not the world as it "is". That is the phenomenological position: regarding perception as a function not only of one's sense organs and the external events occurring within their range, but also of things focal in consciousness at the time such events register through the senses. Thus perception is never a mirror-reflection report of events occurring in the physical environment; instead it is determined by man's personal biases, hopes, fears, and particularly his expectations.

In an example provided by Morgan (1974):

> An actual tree in our physical environment may have no effect on our behavior, even though it is actually there, unless we become aware of it; an imaginary assailant waiting behind the tree can have a profound effect on our behavior even though he is not actually there.

Thus a Humanistic educator such as Wittrock uses a phenomenological paradigm in describing the Behaviorist and the Cognitive theorist as they view each other's world through their own methodologically-tinted glasses.

The purposes of Education, according to the Humanist, are as follows:

> The basic purpose of education should be to assist learners to become adequate, self-fulfilling persons, who are not only strong and independent, but who also see their place and stake in society, and hence are cooperative persons. All learning must be meaningful for purposes of personal growth, and the meaning stuff of learning should deal with attitudes, value, and the personal feeling of the learner. The purposes of all learning activities should include those aspects which contribute both to the learner's immediate well-being and to his long-range growth. To the end that each individual becomes a self-educating person, it is important that he or she actively be engaged in the goal setting process.

Most classroom teachers would find no fault with such an overview of the educational process, yet they would strongly feel the need for specific instructional techniques leading toward the achievement of such worthy purposes. With only a few notable exceptions (Sidney Simon's work in Value Clarification is one, *Jack Canfield's 101 Ways to Increase Self Concept In the Classroom* is another). Humanistic educators have been long on theory and short on program development.

There is considerable rivalry between the Behaviorist and Humanist camps. Behaviorists characterize Humanists as being scientifically unsound in studying areas of human experience not amenable to exact measurement through careful experimental design; Humanists in turn accuse Behaviorists of ignoring the most important areas of human concern. Accusations flying back and

forth are frequently impassioned, thus communication between these two academic citadels tends to be far from productive. One "Humanistic" college administrator has been so parochial as to discourage both his graduate psychology students from taking statistics courses and his faculty members from even attempting to define Humanistic Education.

Robert Ornstein (1972) has drawn the most careful, sensible criticism of Behaviorism:

> Behaviorism stimulated an unusual amount of productive research, especially in the realms of learning and of the motivation of behavior. But a similar problem arose with this approach: the scope of inquiry within psychology soon became unduly narrowed to processes which were amenable to solution by behavioristic methods. Psychologists began to ignore and even deny the existence of phenomena which did not fit into the dominant scheme. "Consciousness" itself was ignored in research for many years; some even denied that it existed. There was an almost total confusion of "behaviorism as a useful tool" with "behaviorism as the total extent of knowledge ..."
>
> ... But in psychology of late, the limitations of the successful Behavioristic paradigm have proven to outweigh the advances. To give one example, until recently psychologists have tended to ignore some evidence (from sources as diverse as Yoga and animal experiments) that man is capable of a high degree of self mastery of his internal physiology.

Biofeedback: A Synthesis of Behaviorism and Humanism

Biofeedback is a self-descriptive term. It means exactly what it implies: through technology, information (feedback) is provided to a person about his inner (biological) state. As a result of receiving this information, one is able to learn to exert control over whatever bodily functions are being measured. It is important to realize that the technology employed here (whether an electroencephlograph — EEG — used in monitoring brain waves or an electromyograph — EMG — used in recording muscle tension) is utilized solely for the purpose of amplifying and displaying signals coming from within. The actual control of the internal state under consideration comes through a process termed "passive volition," by which one manipulates elements of his consciousness (images and feelings) while in a relaxed state. The fact that passive volition may be used to control functions previously considered involuntary because they are a part of the "autonomic" nervous system (thus outside the realm of conscious control), is certainly a breakthrough toward an extended concept of man and his abilities. Thus we have a marriage of two approaches. Procedures lifted *in toto* from the Behaviorist

operant conditioning lexicon are applied, as the amplified signals emanating from internal processes cause the activation of another signal (either visual or audio) whenever the particular internal state occurs. For example, if alpha brain waves are being trained, an audible signal (tone) is sounded whenever the EEG records impulses in the 7 to 13 cycles per second range at the chosen scalp location. The tone serves as a reward, a sign that the desired internal state has been achieved. The subject operates on his own internal environment (manages his own consciousness) in order to keep the reward coming (the tone on). The humanistic aspect of the process is obvious — the subject operates not on the external environment in order to gain a reward presented by the experimenter. He instead manipulates his internal states for the purpose of changing that environment. As the subject learns to match aspects of his own consciousness (certain images and feelings) with the occurrence of the feedback signal, he eventually learns to create the appropriate mental state without the help of the reward signal.

The practical uses of such voluntary control procedures are many. If certain patterns of brain waves can be sensed, epileptic seizures may be averted. If blood flow can be increased or decreased, migraine headaches may be stopped. If certain muscles can be taught to relax in response to threatening stimuli, anxiety may be reduced. As previously described, certain brain wave states have been linked to flashes of creative inspiration. Thus we have examples of behavioristic techniques being utilized in a humanistic context. In this case at least, both sides should be happy, for a new use has been found for some very effective technology and the study of consciousness has been legitimized. It is hoped by the transpersonal educator that such developments will signal the beginning of a new synthesis — yet progress may be slow. It is debatable as to which is more difficult — requiring the Humanist to submit to the rigor of training in the details of data analysis and experimental design or persuading the Behaviorist to stretch his imagination in order to break out of the old paradigms limiting the application of his technology.

Transpersonal Psychology

The school of psychology emerging from the passion of the Behaviorist-Humanist debate is the Transpersonal school. This evolutionary process toward an extended concept of man is buoyed by authors capable of generating transition ideas — those nudging thought beyond preoccupation with current issues such as paradigms limited by technique or philosophy unfulfilled by program development. One of these authors is Robert Ornstein, previously quoted. Another is Willis Harman (1969) who states three propositions hinting at the power of subjective experience, the focal point of transpersonal education:

1. The potentialities of the individual human being are far greater, in extent and diversity, than we ordinarily imagine them to be, and far greater then currently invogue methods of man would lead us to think possible.
2. A far greater portion of significant human experience than we ordinarily feel or assume to be so is comprised of unconscious processes ...
3. Included in these partly or largely unconscious processes are self expectations, internalized expectations of others, images of the self and limitations of the self, and images of the future, which play a predominant role in limiting or enhancing actualization of one's capacities ...

Tom Roberts and Frances Clark (1975) have done more than any other authors to begin the translation of such propositions into questions that may be reasonably addressed by classroom teachers. They state:

> A revolution in psychology usually foreshadows a revolution in education, and the current developments of a new psychology raise a number of questions and possibilities for educators. The new psychology is called "transpersonal" psychology. It is reasking basic educational questions: What are the limits of our capacity for learning? Can we learn to use our minds in ways which surpass our present expectation? Are there new ways of teaching which are superior to our current methods? Are there different kinds of learning which we are failing to develop? ...
>
> Many psychologists judge that we use less than 10 percent of our capacities. Transpersonal psychologists are seeking to increase our understanding of human abilities in order to unlock some of our latent potentials. How can we learn to use some of the abilities which may be hidden in our own minds? A partial answer may be found in studying people who have unusual abilities, and in the cultural, social, and psychological factors affecting their development.

This approach is in direct contrast to that taken by Piaget, a well known psychologist who formulated his theories of development based on an analysis of errors made by large groups of people on an IQ test. It is considered appropriate by Transpersonal educators to search for the outer limits of human potential, then attempt to create conditions conducive to reaching and even surpassing those limits, rather than merely gearing instruction to levels of achievement set by people not exercising the full range of their potential.

Topics of interest to transpersonal educators include altered states of consciousness (including meditation and dreams), recent physiological research focusing on the voluntary control of inner states, self-realization and self-transcendence, parapsychology

and psychic phenomena, spiritual growth, other cultures and their psychologies, and newly discovered forms of energy. Although the vocabulary describing the content of these somewhat overlapping areas is still largely unfamiliar and most teachers have yet had little professional training in transpersonal classroom teaching techniques, there are four forces at work which this author believes will facilitate the incorporation of appropriate transpersonal methodologies into the public school classroom. First, children have a natural curiosity about their own internal processes — finding out more about what makes themselves tick [illegible] be far more fascinating than most traditional subject matter ma[illegible]. Second, there now exists a blooming interest in transferability of learning to life outside the classroom and beyond school years. One's understanding and control of his subjective experience should even increase during the years, given the proper initial boost. Third, the idea of self-transcendence is not an empty term; it is entirely possible for students to transcend their old concepts of self in terms of measurable increase in accomplishment in regular subject matter areas taught by transpersonal methods, to improve performance in all of the fine arts through the use of transpersonal teaching techniques and to increase insight into personal matters through dream interpretation. These areas lend themselves to specific program development efforts which can easily be made a part of any teacher training program. Fourth, in terms of educating the "whole person" the techniques of transpersonal psychology-relaxation, concentration, visualization, and suggestion illustrate the interrelationship of mind and body — when one is a focal point the other is always affected. Students may actually increase learning by controlling their breathing, relaxing their muscles and directing their attention. Conversely, overt behavior is influenced by mental states, which can be voluntarily controlled.

Suggestopedia: The Pragmatic Mixture

Transpersonal educators search unashamedly for a synthesis of methodology that will *work*. It is considered much more important to adapt various techniques and philosophies to a defined program development area (here, the subtleties of subjective experience) than it is to be concerned with supposedly implicit paradigmatic limitations or philosophy too vague to be practical.

For example, Joseph Wolpe's reciprocal inhibition approach is a behavior modification technique used successfully by many therapists. Although the relaxation/visualization exercises employed by transpersonal educators are not used specifically for anxiety reduction, as does Wolpe, they are used for purposes such as mind calming prior to concentration on lesson material, for preparing the mind to idle in the creative reverie state, and in the development of other transpersonal skills.

Transpersonal educators would certainly side with cognitive theorists who have discovered in their experiments that the process of performing the experimental task itself can become more intriging to the animal than the reward being offered. Transpersonal educators maintain that the pleasures involved in examing and putting to use subjective experiences will prove to be reward enough for those undertaking the task.

Of course Humanistic psychology has provided a valuable philosophical background for the Transpersonal educator. In fact, we would consider the training of a student in techniques designed to enhance the role of his subjective experience to be individualized instruction approached from another angle. Rather than merely gearing lesson material to the individual pace of each student, the suggestopedic teacher attempts to help the student gain access to those internal processes which permit him to succeed on a more advanced level.

Even the use of suggestion to enable someone to achieve beyond his supposed limits is not unique to suggestopedic teachers. Athletic coaches, due obviously to the competitive nature of their profession, have sometimes challenged their teams to perform at greater heights than were thought possible — remember, "Win one for the Gipper!" Pep talks aside, most college and professional coaches deliberately orchestrate their team's mental attitude toward their opponent aiming for peak performance at game time. The suggestopedic teacher attempts to harness the power of suggestion in a variety of ways in order to maintain a much higher level of performance over a longer period of time without the intensity of effort required in athletic events. Recent research leaves no doubt that this can be accomplished.

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Do Synchronicities In The Suggestopaedic Teaching Method Enhance Learning?

by
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Abstract.

This speculative paper presents three provocative ideas about suggestopaedic synchronies which may help explain and/or cause the extraordinary learning found in Suggestopaedia. These are, temporal synchrony in certain Suggestopaedic procedures, Suggestopaedic orchestration of classroom informational cues, and synchronous brain wave patterns. These ideas are presented to stimulate thinking and further research.

This paper attempts to engage several insights from Information Science, in examining three of the ways the Suggestopaedic teaching method may be enhancing the human learning process.[1] One of these three ways appears to be unique to Suggestopaedia; the other two ways appear to be found throughout the range of methods of teaching or learning which involve some form of relaxation, meditation, or enhanced state of consciousness.

The first of these ways is the somewhat mysterious-seeming practice in Suggestopaedia, as described by Dr. Jane Bancroft and by other observers, of providing a background experience of 4-4-beat baroque classical music, to which is paced the synchronous yoga breathing of students in meditative deep relaxation, while the instructor intones the lesson material in the same rhythmic pattern synchronously with the music.[3] Since the origins of Suggestopaedia are heavily cloaked by East European political considerations, perhaps no one but advanced yoga masters know why such a procedure has been followed, but a student of Information Science might entertain as explanation the hypothesis following:

Simply put, what is *your* answer to the following question — which is easier to write messages in: beds of fine sand, or beds of course gravel?

You probably would answer, "fine sand" — you might even answer further and observe, "the finer the grain of sand, the more detailed messages can be written in it."

The pertinent natural law stated by Information Science is: THE SMOOTHER THE MEDIUM ACROSS WHICH INFORMATION IS TRANSMITTED, THE MORE INFORMATION MAY BE TRANSMITTED ACROSS IT.

The synchrony of music-beat, student breathing rhythm, and instructor's intonation, may be reasonably regarded as rendering the classroom instructional process, as a medium of information-transfer, unusually smooth.

If relevant, that insight from Information Science poses interesting ramifications in several directions. That natural law, for example, theoretically undergirds the findings of sociologist Basil Bernstein[4] — that speakers of socio-economically disadvantaged dialects, compared to more advantaged strata, are less able to reason and more dependent upon opinion of authority as to matters of what is true, false, right, wrong. Clumsy and disjointed dialects heavily affect the very bases of perception itself.[5] The smoothness of one's customary language is itself a powerful determinant of overall mental ability.[6] [7]

Another interesting ramification of this natural law may serve to explain why numerous teaching methods, founded on the otherwise-sound principle of rendering the learner a more active contributor to the learning process, have failed so signally to produce improvements in rate and quality of learning. Unless carefully "smoothed" by some protocol, switching inputs from student to student constitutes a disjointed, coarse-grained medium of information-transfer.

Yet another interesting implication is found in the several references by Dr. Georgi Lozanov, creator of Suggestopaedia, to the instructor's "projection" of word and concept meanings to the student.[8] Such projection may be perhaps dismissed as a matter of subliminal cues and body language — but almost any highly effective trainer of mind-enhancement-oriented human potential, and of whatever discipline, will take the reference quite seriously based on his own experiences. The writer has informally experimented with himself and through others on this point. Projection of some sort is definitely involved, far beyond the oral message, whether its transmission is by subsensory or by whatever means. The instructor who runs information or experiences in his own mind and silently "projects" these to his meditating students while he talks, is entirely more successful a teacher than when his attention is on eloquent verbal delivery — even when his verbal delivery is superb. However, in view of the Information Science principle observed above, trainers in various mind-training disciplines might not only turn more deliberatley to such projection, but give more attention to what results might be obtained through rendering their "medium" of delivery into still smoother format — and so might teachers generally.

Second Synchrony.

The famous orchestration of cues in Suggestopaedia — so noteworthy that some American researchers dubbed Dr. Lozanov's teaching method as "Cue-Reinforced Learning" — appears analogous in information-science terms to a process in physical "orchestration" which the reader may easily test for himself:

> Extend your arm and let a friend force that arm down through your resistance. Then extend your arm again but this time *imagine* your hand being hooked over a nearby windowsill or bookshelf. Let him try again to thrust that arm down through your resistance.

The remarkable increase that Tai-Chi-like fantasy step adds to the strength of your resistance (and one may reinforce the strength of any physical act accordingly by accompanying it with an appropriate fantasy image in his imagination), may be found in that image's extension of voluntary effort into involuntary musculature and body processes so that all, not just part, of the body-limb involved is contributing to the results. One certainly does not need to be hysterical to employ "hysterical strength," physically *or* mentally. Indeed, working all of one's system together, instead of taxing one's resources with arduous effort in mere fractions of the body-system involved, is singularly more refreshening and less tiring than are the conventional modes of operation. (Athletic coaches among the educators reading this paper have a wealth of possibilities to explore in the principle: accompany any demanding athletic act with an appropriate fantasy image to reinforce strength, speed, accuracy, and agility.)

The appropriate fantasy image can be usefully employed in other educational contexts. Art students, fantasizing being some famous artist reborn,[9] or fantasizing attending the world's leading art institute[10] under mental-acceleration/time-distortion conditions,[11] dramatically improved their art many times over what could otherwise have been expected — and we might find hints of these effects also in the role-play aspects of Suggestopaedia. Other ways to pursue this avenue of reinforcing educational content with fantasy images can extend usefully in many directions.

For example, Psychegenics has found it to be a useful datum that if one meditatively fantasizes being an inchworm the length of *pi* chasing around a circle, several mathematical concepts become immediately meaningful and *useable*. Taking the dozen or so most-key concepts of an academic subject and playing a few minutes of such "mind games" with each concept, should create such a convenient concept-structure around which to hang all remaining details in that subject as to make the learning/teaching of that subject a matter more of days than of weeks. The form in which it is learned may also prove more useful to the

learner, immediately and for the long haul. This is one avenue wherein gains may possibly be found in quality and speed of concept-centered learning to match or exceed Suggestopaedic gains in quantity of memorized information.

Once students have been deeply trained in arts of deep relaxation, other ways to pursue concept-centered learning may well reward even beyond the best effects ever reported for the original Suggestopaedic method-*cum*-yoga. For example, these experimental projects appear worthy of exploration:

> In learning foreign language such as Burmese, have deeply meditating students fantasize for several hours a two-year experience of living in Rangoon, interacting with the Burmese in their own language — or even fantasize growing up through part of a lifetime as a native Burmese, all the while a great volume of Burmese language information is being presented auditorially but out of attention. If relaxation is deep enough, some students should come back with all available linguistic resources having been assimilated in support of that fantasized experience, as if they *had* had two years' language experience in Burma.
>
> In physics (and other sciences), have deeply meditating students fantasize being a reborn Isaac Newton (or other noteworthy scientist) growing up in the Twenty-*First* Century. Even outside the schoolroom, enough scientific concepts are floating subliminally around our culture to generate some first-rate science-concept-structures in almost any student. Ditto the arts, ditto the trades, ditto business and sales, ditto athletics. Ditto the practice and especially the experience of history.

These last two sets of fantasy techniques are, for the most part, suggested directions for experimentation rather than being well-established teaching procedures. The requisite training, deeply enough to produce good mental acceleration/time distortion effects, has been only rarely performed. When it has been performed, researchers have found that, whether for shorthand, violin, typing, golf, singing, or piano, a thousand hours of imagined practice in some skill can be experienced in several minutes by the clock in objective time, and produce results as good as would be expected from 700 hours of real practice time.[12] Those results generally were gotten under hypnosis, but time-distortion effects are observed in many other contexts than that of hypnosis, and Psychegenics has been finding that most, perhaps all, useful effects obtained in hypnosis can be as readily obtained without any use of hypnosis.[13]

The general statement which may pertain to all this range of consideration may be simply that of finding opportunities for all the responses of the learner to work together rather than partially

at odds. Such opportunities make feasible the integration and articulation of all the direct and inferred data available to the learner from all sources, past and present. Synchronicity and orchestration of cues by the Suggestopaedic instructor may be only a modest indication of what may pertain in this sector of educational research.

Synchrony No. 3

The third area of inquiry, into the effects of synchrony upon the learning process, leads us into the human brain itself. We have all been taught that our thinking and perceiving and experiencing are all a function of cells in the brain firing impulses into one another, causing each other to fire in turn or inhibiting them from firing. We have also all learned that the cells of the brain fire in a synchronous beat or rhythm, measured on the EEG (electroencephalogram) as a "brainwave." Present scientific and medical literature does not appear to relate these two descriptions of brain-cell behavior, nor does it appear to offer much explanation of *why* there should *be* a synchronous brainwave in the first place. Since all mammals — and perhaps all other highly developed animals also — exhibit such brain-wave synchronous behavior, these EEG-rhythms appear to be a crucial survival process — but their purpose remains obscure. Again, insights of Information Science present an interesting hypothesis, one which would also serve to help explain the widely-observed gains in information-handling capability demonstrated by practicioners of deep relaxation or meditation. Let us broach the hypothesis in this manner:

When it is easier to change the behavioral outcome of whether some brain cell will fire — when it is on the hair-trigger's edge of firing, or still a long way away from the firing point?

Our impression is that it uses less energy to interrupt a flow of steady firings than to *create* a cell's firing from naught. We are beginning to see communications within the brain, not as a matter of cells firing off into one another but as a matter of *when* they fire — a matter of *modulation.*

This hypothesis could explain *why* there *is* an EEG rhythm in the first place: if cells are firing in phase with one another, by firing just barely ahead of the "beat" they can modulate each other's actions with regard to firing or not firing. Without a synchronous EEG rhythm the brain could not communicate with itself, or at the very least its intracommunicative processes would be severely impaired.

If correct, this hypothesis of brain-cell synchrony would explain much about such phenomena as the survival value of the "dream cycle" of EEG sleep rhythms, about the apparent effects

of personality integration observed in practiced meditators, and the topic of interest here — the apparent improvements in information-handling capability associated with deep relaxation/meditation.

It would be of profound significance that the "beta" brainwave rhythms most of us manifest throughout our everyday wakestate activities is of weak amplitude because "beta" is too fast a rhythm for most cells to "catch the beat." In "beta," very little of our brain is in phase and able to communicate with itself or to cope with matters. In deeper, slower rhythms — alpha, theta, and delta rhythms associated with successively deeper levels of relaxation — signal amplitudes are stronger with each, demonstrating that more brain cells have caught the slower beat and gotten in phase — that more brain is available and in communication.

If this hypothesis is correct, then it would be small surprise that a teaching method including use of meditation/deep relaxation, such as pre-purge yoga-based Suggestopaedia, would be associated with profound increases in apparent learning capacity and performance.[14] If this hypothesis is correct, then numerous methods well beyond Suggestopaedia in their effects, should soon be suggesting themselves.

This writer's impression is that small steps in innovating teaching/learning methods will meet the same resistance as would large steps, so for the effort it would be better to go for the large steps.

This paper has attempted to explore three areas in which various synchrony aspects of the Suggestopaedic teaching method might be found to relate casually to reported extraordinary improvements in learning performance associated with early forms of that method. All three aspects — synchrony in time by classroom processes, synchrony in terms of orchestrating informational cues (as parts of a larger question of synchronizing human responses), and synchrony of brain-cell response as measured on the EEG, appear to support positively the learning process and to lead to improvements in that process. All three areas of synchrony, moreover, appear attainable by alternative methods some of which may lead to effects beyond those once reported for Suggestopaedia in its prime.

1 Another way that Suggestopaedia, and other related teaching or learning processes, may aid learning, is discussed by the writer in "Outline — The Whole-Brain Learning Method And Human Learning Processes" (1973), available from Psychegenics at 28 North Summit Drive, Gaithersburg, Md. 20760.

2 See especially Professor Bancroft's description in her privately published booklet, THE LOZANOV LANGUAGE CLASS (1975), available from her in the Department of Humanities, Scarborough College, University of Toronto.

3 These aspects of the Suggestopaedic process, reportedly based in yoga and that Suggestopaedia's creator, Dr. Georgi Lozanov, himself being a yoga master, were purged from certain current commercial "Suggestopaedic" teaching programs. This purge appears to derive from their proprietor, the Communist government of Bulgaria, having followed the 1972 lead of the Soviet Union in determining that yoga is "an enemy of the people" to be eliminated. These yogic elements appear, however, the crucial ingredients of the Suggestopaedic process, and part of SALT's task is to reintegrate these with what else is presently available of Suggestopaedia and thence to evaluate their role and effects.

4 Basil Bernstein, "Social Class and Linguistic Development: A Theory of Social Learning." in Halsey, Floyd, and Anderson (eds), EDUCATION, ECONOMICS AND SOCIETY, New York: The Free Press, 1961.

5 See Lev Vygotsky, THOUGHT AND LANGUAGE. Cambridge, Massachusetts: M.I.T. Press, 1962.

6 Win Wenger, HOW TO INCREASE YOUR INTELLIGENCE. New York: Bobbs-Merrill, 1975, Dell, 1976.

7 Win Wenger, ON RAISING HUMAN INTELLIGENCE. Gaithersburg, Md., MCM Press, 1971.

8 In raw, unedited translations from the Bulgarian of his book, SUGGESTOPAEDIA AND SUGGESTOLOGY.

9 See the topic, "Artificial Reincarnation," in Sheila Ostrander and Lynn Schroeder, PSYCHIC DISCOVERIES BEHIND THE IRON CURTAIN. Englewood Cliffs, New Jersey: Prentice-Hall, 1970.

10 Robert Masters and Jean Houston, subjective realities. Private monograph, 1972.

11 Linn Cooper and Milton Erickson, TIME DISTORTION IN HYPNOSIS. Baltimore: Wilkins and Wilkins, 1954, passim. An important, though insufficiently noticed, work.

12 Erickson and Cooper, op. cit.

13 Hypnosis we see as the tunnel-vision effect of concentrating on one stimulus and shutting all else out. This tunnel-vision concentration makes the subject dependent on programming or programmer, and is dissociative. Hypnosis may sometimes even lay compulsions on the subject, though of course these can be easily removed. Charles Tart's theories of subject-dependency may well pertain here: they definitely do not pertain in other altered states of consciousness. In Psychegenic meditations, for example, Deep Relaxation is frequently induced by bringing more and more of the total available field of sensory and other awareness into simultaneous awareness. With everything in his field of perception, the Psychegenic meditator is fully independent, free and competent to deal with matters on his own. There is definitely no hypnosis in Psychegenics by this definition; rather, the Psychegenic state is integrative rather than dissociative. (By this definition, interestingly enough, conventional schooling may reasonably be regarded as primarily hypnosis.) Dissociative or no, hypnosis remains an invaluable research tool.

14 Even when the slowing of brain-wave rhythm is accomplished by electrical induction with laboratory animals (as in Gavalas, Walter, Hamer and Adey, "Effect of Low-Level, Low-Frequency Electric Fields in EEG and Behavior in Macaa Nemestrina" in *Brain Research* # 18, March 17, 1970), reported by Maya Pines to double the rate of learning performance in those animals in (THE BRAIN-CHANGERS. New York: Harper & Row, 1973).

ABSTRACTS

Abstracts of selected articles published in the Bulgarian technical journal:

Suggestology and Suggestopaedia, 1975, 1(1).

Granovsky, S. With best wishes. *Suggestology and Suggestopaedia*, 1975, 1(1), 1-2.

A new science, the science of suggestion or suggestology, has developed in our country in the last 10 years. The tireless efforts of its originator, Dr. Georgi Lozanov, and of his team of assistants, as well as the understanding shown by our People's Government and the great support it has rendered him, have contributed to the rapid development of the new science. By a decree of the Council of Ministers of Bulgaria, the first suggestology research center in the world was set up in 1966 and this became later an independent research institute. Thus, the possiblity was created of carrying out comprehensive research into the role played by suggestion in all fields of human interrelations and of adopting a strictly scientific approach towards a number of phenomena which had often been given religious, fantastic or mystic interpretations.

The science of suggestology is based on the methodological foundations of dialectic-materialist philosophy. It treats suggestion as a form of psychic reflection and as a universal phenomenon which is subject to control. The conscious and unconscious forms of information processes between people are examined in the light of their dialectic unity. The possibilities of suggestion for tapping the reserves of the individual are deliberately and purposefully placed in the service of man. On the other hand, it is possible to wage an organized struggle against those negative and harmful effects of suggestion and against such applications of it as are incompatible with the freedom of the individual.

The founder of suggestology, Dr. Georgi Lozanov, moved into the sphere of education, and this resulted in the emergence of suggestopaedia. This is a new pedagogic system based on the desuggestive-suggestive approach to the person who is studying, an approach which makes him feel freer and stimulates him. Characteristic of suggestopaedia is the high degree of humanization of the process of instruction, involving the creation of a favorable psychological atmosphere which not only facilitates and accelerates the process of the assimilation of knowledge but also brings about a profound re-moulding of the personality of the person undergoing instruction.

Lozanov, G. The nature and history of the suggestopaedic system of teaching foreign languages and its experimental pros-

64

pects. *Suggestology and Suggestopaedia*, 1975, 1(1), 5-15.

The suggestopaedic system of instruction stems from desuggestive-suggestive communicative psychotherapy which is connected with the globally operating, emancipating and stimulating factors in the arts, and with contemporary experimental researches into the motivation, needs, striving and impulsions of the individual. This entire complex is adapted to the conditions of the instructional process. The suggestopaedic system of instruction has the following indispensable characteristics:

1. It always involves tapping the reserves of the student's memory and intellectual activity, and, in general, of his whole personality. There can be no suggestopaedia unless the complex reserves have been tapped.
2. The process of instruction is invariably accompanied by an atmosphere that produces an effect of relaxation or, at least, of no fatigue. There is no suggestopaedia when students become tired.
3. Suggestopaedic training is always a pleasant experience.
4. It has a good effect from the educational point of view in that it softens the aggressive trends in the student and helps him in the process of social adaptation.
5. It has been found that it has a marked psychoprophylactic and psychotherapeutic effect in cases of functional disturbances or of functional components of organic diseases.

Lozanov sketches the history and nature of Suggestopaedia and shows that the method does not stem from hypnotic psychotherapy, nor autogenic training, nor relaxation psychotherapy, nor rational methods of convictions such as advertising, nor alert suggestive psychotherapy, but that it does derive from psychotherapy. The method utilizes what may be usually called a placebo-factor, external objectivication of a patient's expectations, and a suggestive ritualization.

Suggestopaedia is based on these three principles: 1.) Joy and lack of strain in learning, 2.) Unity of the consciousness and unconsciousness, and 3.) Suggestive interrelatedness. Joy shows up in behavioral pseudo-passivity. The unity of consciousness calls for the global organization of the student. Suggestive interrelatedness activates the reserve capacity of the individual and requires continuous feedback about the results of learning. Psychological, didactic, and artistic means are simultaneously realized to implement these principles each moment of the instruction.

Balevsky, P. EEG changes in the process of memorization under ordinary and suggestive conditions. *Suggestology and Suggestopaedia*, 1975, 1(1), 26-36.

The existence of any close parallelism between the level of brain activity and memorization is further refuted by the data obtained by a number of authors of works on this subject who found that memorization improved with muscular relaxation, yoga exercises, autogenous training, alpha-dynamics and other methods that are accompanied by a decrease in brain reactivity. Suggestion and autosuggestion play important parts in their methods.

The aim in the present research was to study the correlation between the level of brain activity and the level of the short-term memory under ordinary conditions of memorization and under those created by using some of the means of suggestion. In this particular case we employed only the intonational presentation of the words and the calm classical music whose soothing effect on the brain's bioelectric activity had already been proved in earlier experiments of ours.

The level of brain activity at rest, in the process of memorization and of reproduction was determined quantitatively on the basis of the percentage distribution of the alpha, beta and theta waves and of the average frequency of the EEG from the left occipital-parietal lead. The level of memorization was determined on the basis of the number of correctly reproduced or translated words and sentences immediately after memorization.

The experiments carried out under ordinary conditions of memorization with simultaneous recording of the electroencephalograms of the experimental subjects are a confirmation of the law of Yerkes-Dodson. The number of words memorized increased with the rise in brain activity. A rise in brain activity of from 15 to 25 per cent according to the background proved to be the optimum one for getting good results in memorization. Any further increase in the excitability of the brain had an unfavorable effect on memorization.

It is sufficient, however, in the memorization experiments to use some of the means of suggestion which have a soothing effect on the brain's bioelectric activity, such as the intonational presentation of the words and specially selected classical music, and the validity of the Yerkes-Dodson law is partially upset. There are grounds to assume that the volume of the short-term memory can be increased to a considerably larger extent by harnessing the suggestive effect, not only of some of the ritual aspects such as intonation and music, but of the entire complexity of suggestive means employed in the suggestopaedic method, which might lead to the complete disappearance of the validity of the Yerkes-Dodson law.

The data obtained show that efficient memorization is possible also at a relatively low level of brain activity. The paradoxical

effect of lower excitability — higher productivity, as already established in students attending suggestopaedic courses in foreign languages, has been confirmed in relation to short-term memory as well. The psychohygienic significance of this effect is obvious.

Pashmakova, K. The peripheral stimuli in learning English orthography. *Suggestology and Suggestopedia*, 1974, 1(1), 37-44.

The familiar view that English orthography is very complicated and that it is almost impossible to master it to perfection has its grounds in the first place in the fact that the 46 phonemes in modern English are presented by 144 graphemes, only 26 of which are single letters. The other 118 graphemes are combinations of letters — diagraphs, trigraphs, and polygraphs. To classify all the different cases and draw up a scheme of them would be a practicable, although difficult task.

In the hope of finding an expedient way of teaching the students to spell correctly — one that was time saving, had no traumatizing effects and would meet the requirements of the suggestopaedic system of studying foreign languages — we directed our efforts towards making use of the visual stimuli coming in, mainly along peripheral channels.

The following conclusions can be drawn from the material treated in this manner and from the results obtained: 1.) As one of the suggestive factors, the peripheral visual stimuli have a considerable effect in improving the spelling of students. 2.) The peripheral perceptions, notwithstanding their passive character, are promising auxiliary suggestive elements which should be included in the general suggestive process in cultivating the graphomotoric aptitude of the students.

The author utilized a three-factor analysis of variance design with factors of experimental vs. control grop, initial level of students and the practice effect over four consecutive tests. The dependent variable was the number of English words spelled correctly on each of four occasions from a list of 35 English words commonly misspelled by foreigners learning the language. Students were grouped by the initial aptitude on the basis 0-10 words, 11-20 words, or 21-30 words spelled correctly. Students with over 30 words correct initially were excluded. Wall charts showing the correct phoenetic spelling and actual spelling of these words were hung on the wall during class on consecutive days. These wall charts with spelling of the 36 words were not shown in the control group.

Racle, G. A suggestopaedic experiment in Canada. *Suggestology and Suggestopedia,* 1975, 1(1), 45-51.

The writer reports on two experiments aimed at adapting and evaluating the application of suggestion to teaching French and English in Canada to Canadian civil servants. Both experiments utilized the pretest-posttest approach in evaluating the method without a control group which learned the foreign language in some other method. Students met in class for 22 consecutive days, 3½ hours a day with a half hour break in between. There were an additional 3 half days for tests and another half day for graduation ceremonies. The Modern Language Ability Test was used to assess the student's initial knowledge of French and all students were classified as beginners accordingly. The posttest achievement test was the same one as the initial one and utilized: 100 written words, 10 orally given sentences, 20 written sentences and oral replies to 3 oral questions. For results, students with the least initial knowledge made the greatest gains and students with the lowest MLAT also made the greatest gains. Students were enormously motivated to continue their training by this method. This is indicated by the fact that many said they were ready to come back if necessary during their vacation to continue their training with this method. Both experiments provided similar results and further experiments using the suggestopedic method are in progress.

Mitsova, R. Aural comprehension in the suggestopaedic process of instruction. *Suggestology and Suggestopedia,* 1975, 1(1), 52-56.

The present discussive report deals with 1.) the suggestopaedic concept of audition, and 2.) with the development of that capacity under the conditions of the suggestopaedic process of instruction.

The development of this capacity takes place not through repetition and training, but by arousing greater interest through creating a particular set-up, and an emotional attitude in the process of audition in relation both to the instructional dialogue and to the texts that are familiar to the students. The more markedly expressed is the attitude of the listener (speed of reproduction, spontaneity of reaction, and paralinguistic means), the more thorough is the realization of the aim pursued auditorily.

In the suggestopaedic process this effect is obtained in two parallel ways, namely: a) By the contents of what is communicated to the student, a communication which is emotional and highly informative, b) By the manner in which the information is given, a manner which takes into account the vehicles of the nonspecific psychic reactivity, by the artistic interpretation of the

communication, by creating an atmosphere of expectation and by the build-up of motivation in the listener in order to obtain some particular information.

The following was observed as a result of employing audition in the manner described in the process of instruction at the end of the first period of study (25 days with a daily four hours of instruction in the suggestopaedic foreign language course):

1. The students could understand each other fully in their conversations in the foreign language.
2. The semantic content in the conversations was comprised of 1800 lexical units and the basic grammatical categories. Students were also able to hold conversations with people whom the students had never met before.
3. There was spontaneity of speech reactions in the reproduction of the texts the students had heard.
4. There was a trend towards marked expression of the students' attitude towards the subject of the text that they had to reproduce.

Krasheninnikov, A.Q. and Stepanyan, A.H. Verbal realization of scientific and technical texts. *suggestology and Suggestopedia,* 1975. 1(1), 57-63.

This article discusses the problem of continuing and adapting the suggestopedic method to specialty instruction after students have initially learned the material in a foreign language at a general level. Students are quite interested in getting into their own field of specialization and would like to have the suggestopedic method continue in this area as it was for their initial general level beginning course.

Features of the suggestopedic course as utilized in the beginning course should be preserved to the extent possible in instruction in specialized fields. Any methodical dissonance may lead to negative results otherwise.

Three phases can be distinguished in the transition. First, structures and lexical units from the first phase are carried over such as "with the help of," "this concerns," etc. Secondly, use is made of common scientific terms used widely throughout science and technology. Third, specific technical terms are then introduced appropriately to the specific specialty area.

The arrangement of the instructional material in this transition to a particular specialty follows certain lines. Students are familiarized first with the material in the traditional way. This is followed by a suggestopedic elaboration of the material, including intonation, facial expression, and gesticulation and role playing such as imitating the position taken in working a lathe. Next, classroom training exercises feature reading aloud. Then comes

the guided dialogue in the specialty area. Finally, reporting and summarizing by the students mark the end of the transition process.

Verbal realization of a written text is the intermediate link that ensures the strengthening of the student's aptitude and skill in holding a free conversation on any subject connected with his specialty, in freely communicating any special information in the form of a report or announcement, and finally, provided this is necessary for the future work of the student, in slowly dictating the respective material, scientific paper, report or lecture.

Novakov, A. & Kolarova, D. Suggestology news conference on intensive methods of instruction in foreign languages — suggestopaedia section — Moscow, January, 1974. *Suggestology and Suggestopaedia*, 1975, 1(1), 64-68.

A conference to deliberate the problems of intensive instruction in foreign languages was held for the first time in the Soviet Union, in Moscow, from January 16 through 18, 1974. It was organized by the Maurice Thorez Foreign Languages Pedagogical Institute in Moscow. The aim of the Conference was to discuss problems of intensification in the teaching of foreign languages, to re-analyze the results obtained so far by the various intensive methods and work out a program for future work.

The Maurice Thorez Institute has carried out large-scale practical and research work in the last 10 years in foreign language instruction by intensive methods. The joint research work carried out with the Suggestology Institute in Sofia has made it possible, in the opinion of the Organizing Committee of the Conference, to accumulate a great deal of experience which when generalized and disseminated, will be of interest to all those working on methods of teaching foreign languages in educational establishments.

Z. M. Tsvetkova reported that assessment of intensive courses is complicated because of problems such as the absence of concrete criteria to assess mastery level of the language. It is not known experimentally how many hours are necessary for intensive instruction, and experimental research has not been tested conclusively on this process of instruction.

Leontiev directed attention to suggestopedia because it takes into account the psychology of communication.

Smirnova reported on the intensive research program being carried out at the Lenin Pedagogical Institute at Moscow.

Papers read by Delvolvskiy, and others provoked criticism because they link learning under relaxation and hypnosis with Suggestopedia without taking the trouble to differentiate these methods. Their incomplete understanding is also reflected in their results which were clearly less than typical results obtained with Suggestopedia.

Gez surveyed the history of intensive methods of instruction in languages. (1)